ADSL 2/2+ Router

ADE-3410 / ADE-3400v2 / ADE4400v2

User's Manual

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Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio technician for help.

FCC Caution:

To assure continued compliance (example-use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the Following two conditions: (1) This device may not cause harmful interference, and (2) this Device must accept any interference received, including interference that may cause undesired operation.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE)

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

WEEE

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

Revision

User's Manual for ADSL 2/2+ Router
Model: ADE-3410 / ADE-3400v2 / ADE-4400v2
Rev: 1.0 (May 2006)
Part No. EM-ADE3410v1

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1. Introduction

The PLANET ADSL 2/2+ Router, ADE-3410 / ADE-3400v2 / ADE-4400v2, provides office and residential users the ideal solution for sharing a high-speed ADSL 2/2+ broadband Internet connection. It can support downstream transmission rates of up to 24Mbps and upstream transmission rates of up to 3.5Mbps. The product supports PPPoA (RFC 2364 - PPP over ATM Adaptation Layer 5), RFC 2684 encapsulation over ATM (bridged or routed), PPP over Ethernet (RFC 2516), and IPoA (RFC1577) to establish a connection with ISP.

Via the user-friendly management interface, ADE-3410 / ADE-3400v2 / ADE-4400v2 can be managed by workstations running standard web browsers. Furthermore, the device provides DHCP server, NAT, virtual server, DMZ, access control, IP filter, PPTP/IPSec/L2TP pass-through, DDNS, and UPnP capability.

The device also serves as an Internet firewall, protecting your network from being accessed by outside users. It provides the natural firewall function (Network Address Translation, NAT). All incoming and outgoing IPs are monitored and filtered. Moreover, it can be configured to block internal users from accessing to the Internet.

1.1 Feature

Internet Access Features

- ***Shared Internet Access.*** All users on the LAN can access the Internet through the ADE-3410 / ADE-3400v2 / ADE-4400v2 using only a single external IP Address. The local (invalid) IP Addresses are hidden from external sources. This process is called NAT (Network Address Translation).
- ***Built-in ADSL 2/2+ Modem.*** The device provides ADSL 2/2+ modem, and supports all common ADSL connections.
- ***IPoA, PPPoE, PPPoA, Direct Connection Support.*** Various WAN connections are supported by ADE-3410 / ADE-3400v2 / ADE-4400v2.
- ***Auto-detection of Internet Connection Method.*** In most situations, the device can test your ADSL and Internet connection to determine the connection method used by your ISP.

- ***Fixed or Dynamic IP Address.*** On the Internet (WAN port) connection, the device supports both Dynamic IP Address (IP Address is allocated on connection) and Fixed IP Address.

Advanced Internet Functions

- ***Virtual Servers.*** This feature allows Internet users to access Internet servers on your LAN. The required setup is quick and easy.
- ***Firewall.*** Supports simple firewall with NAT technology and provides option for access control from Internet, like Web, FTP, Telnet, SNMP, ICMP, and ALL services. It also supports DoS prevention and IP filtering.
- ***Universal Plug and Play (UPnP)*** UPnP allows automatic discovery and configuration of the Broadband Router. UPnP is supported by Windows ME, XP, or later.
- ***Dynamic DNS Support.*** DDNS, when used with the Virtual Servers feature, allows users to connect to Servers on your LAN using a Domain Name, even if you have a dynamic IP address which changes every time you connect.
- ***VPN Pass through Support.*** PCs with VPN (Virtual Private Networking) software using PPTP, L2TP, and IPSec are transparently supported - no configuration is required.
- ***RIP1/2 Routing.*** It supports RIP1/2 routing protocol for routing capability.
- ***Simple Network Management Protocol (SNMP).*** It is an easy way to remotely manage the router via SNMP.

LAN Features

- ***Dual-Port.*** The ADE-3410 incorporates on one Ethernet port and one USB port, making it easy to create or extend your LAN.
- ***Ethernet Port.*** The ADE-3400v2 provides one Ethernet port, making it easy to create or extend your LAN.
- ***4-Port Switch.*** The ADE-4400v2 incorporates a 4-port 10/100BaseT switching hub, making it easy to create or extend your LAN.
- ***DHCP Server Support.*** **D**ynamic **H**ost **C**onfiguration **P**rotocol provides a dynamic IP address to PCs and other devices upon request. The device can act as a DHCP Server for devices on your local LAN.

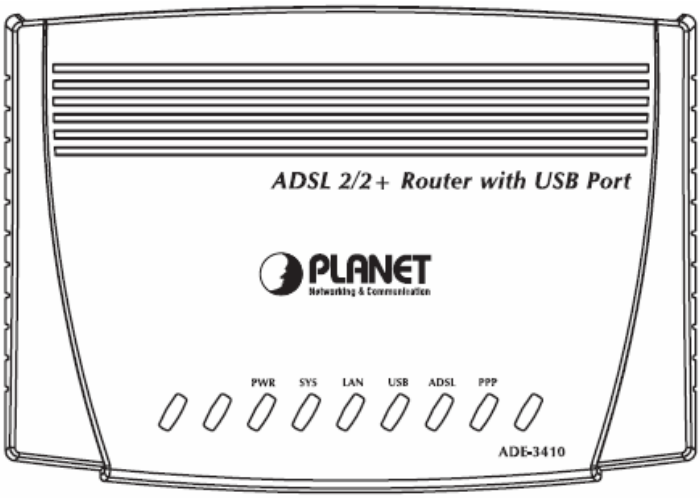
1.2 Package Contents

- ADE-3410 / ADE-3400v2 / ADE-4400v2 Unit

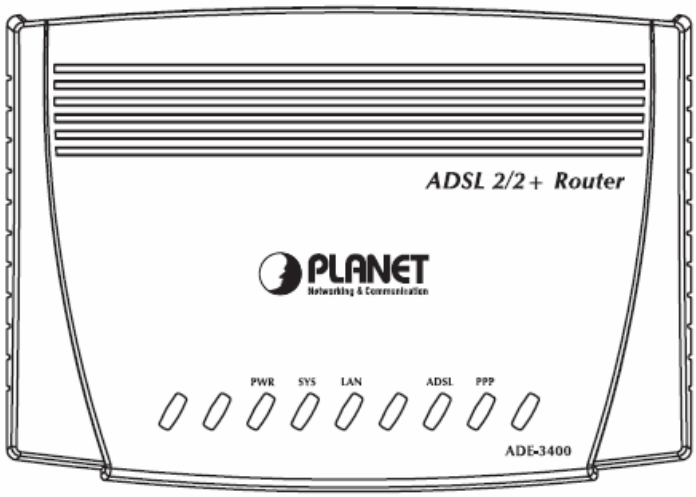
- Power Adapter
- Quick Installation Guide
- User’s Manual CD
- RJ-11 (ADSL) cable
- RJ-45 cable
- USB cable (ADE-3410)

1.3 Physical Details

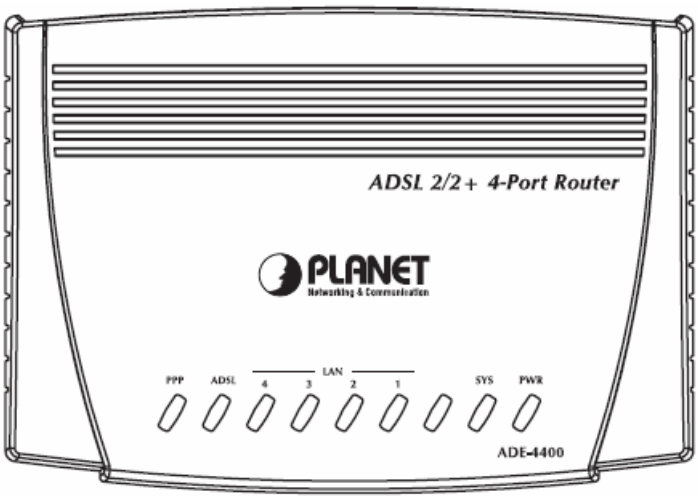
Top-mounted LEDs of ADE-3410



Top-mounted LEDs of ADE-3400v2



Top-mounted LEDs of ADE-4400v2

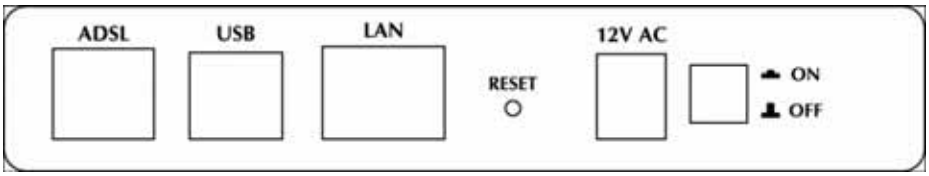


LED Indicator

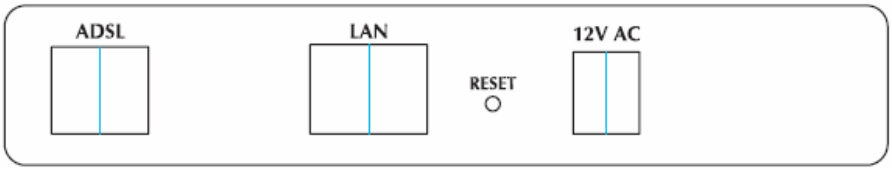
LED		Meaning
1	**PPP :**	Lit steady when there is a PPPoA / PPPoE connection.
2	**ADSL:**	Lit when successfully connected to an ADSL DSLAM (“linesync”).
3	**USB:**	Lit when the USB port is connected to the PC and working properly (ADE-3410).
4	**LAN:**	Lit when connected to an Ethernet device. Green for 100Mbps; Orange for 10Mbps.

		Blinking when data is Transmitted / Received.
5	**SYS:**	Lit when the system is ready.
6	**PWR:**	Lit when power is ON.

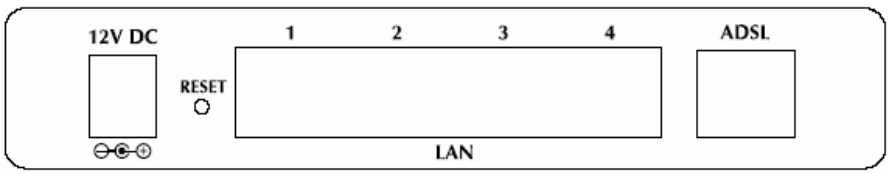
Rear Panel of ADE-3410



Rear Panel of ADE-3400v2



Rear Panel of ADE-4400v2



Port		Meaning
1	**Power Switch**	Power ON/OFF switch (ADE-3410).
2	**12V**	Connect the supplied power adapter to this jack (ADE-3410 / ADE-3400v2: 12V AC; ADE-4400v2: 12V DC).
3	**RESET**	After the device is powered on, press it to reset the device or restore to factory default settings. Reset the device 6 seconds above to restore the factory default settings (this is used when you

		can not login to the router, e.g. forgot the password)
4	**LAN**	Connect a UTP Ethernet cable (Cat-5 or Cat-5e) to one of the four LAN ports when connecting to a PC or an office/home network of 10Mbps or 100Mbps.
5	**USB**	Connect the supplied USB cable to this port when connecting to the PC (ADE-3410).
6	**ADSL**	Connect the supplied RJ-11 (“telephone”) cable to this port when connecting to the ADSL/telephone network.

2. Installation

This chapter offers information about installing your router. If you are not familiar with the hardware or software parameters presented here, please consult your service provider for the values needed.

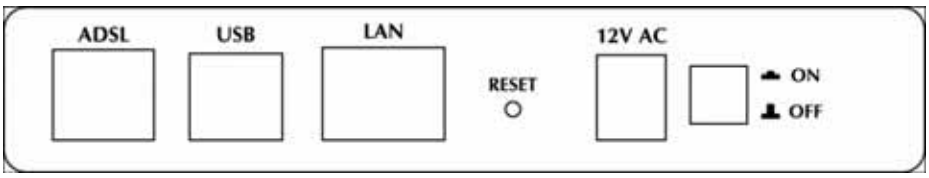
2.1 System Requirement

1. Personal computer (PC)
2. Pentium II 233 MHz processor minimum
3. 32 MB RAM minimum
4. 20 MB of free disk space minimum

2.2 Hardware Installation

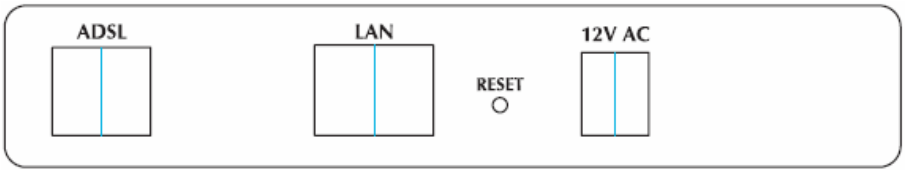
This section describes how to connect and configure the ADE-3410, ADE-3400v2, and ADE-4400v2.

ADE-3410



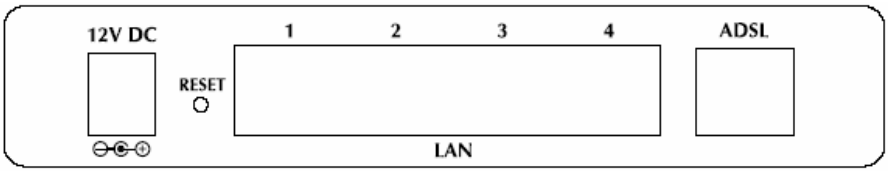
ADSL	USB	PC /	Power
Line	Cable	Hub	Adapter

ADE-3400v2



ADSL	PC /	Power
Line	Hub	Adapter

ADE-4400v2



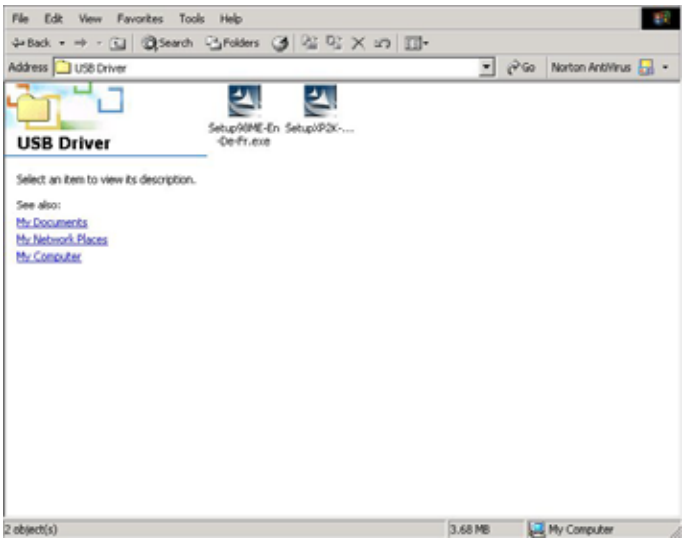
Power	PC /	ADSL
Adapter	Hub	Line

2.3 Installing the USB Driver on a PC (ADE-3410)

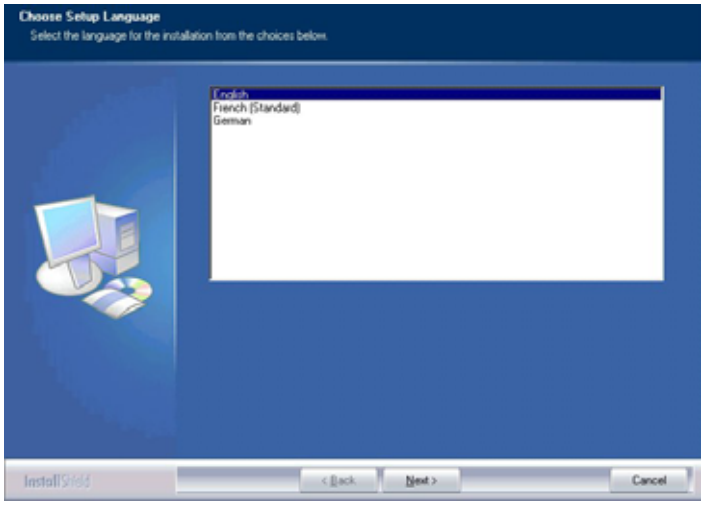
If you connect the device through USB port instead of Ethernet port, Windows will automatically detect the device when the USB cable is connected to the PC at the first time. Please follow the steps to install the USB driver.

For Windows XP & 2000：

1. Start Windows. Then insert the installation CD into the CD-ROM drive. In next window, to specify the driver directory such as “G:\USB Driver\setupXP2K_En_De_Fi” and to continue.

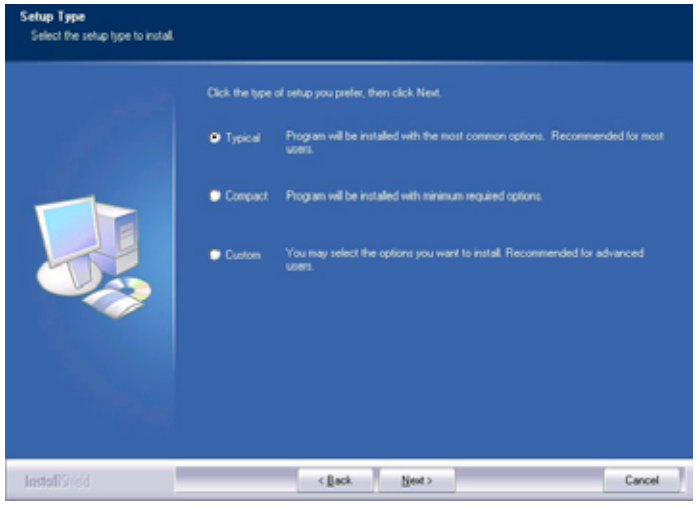


2. Choose the setup language and click “Next” (There are three languages that user can choose: English, German, and French).

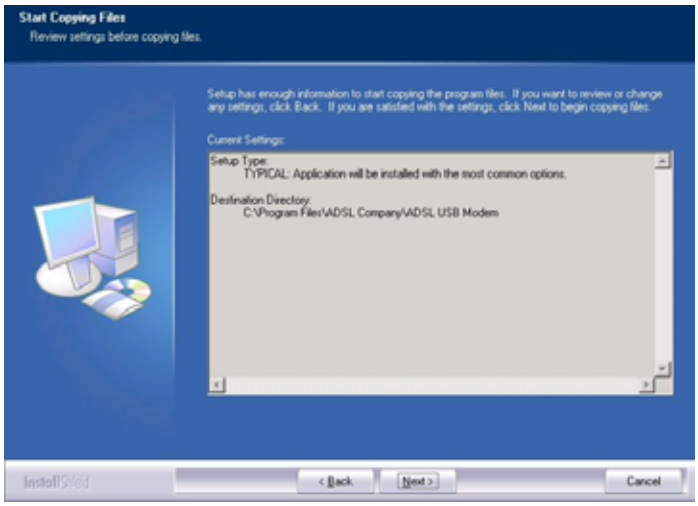


3. Then follow screen.

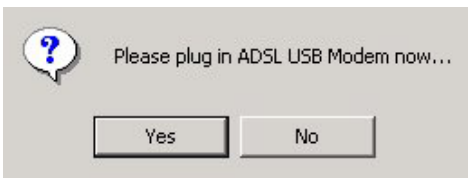
4. Click the type of setup you prefer, then click “Next”.



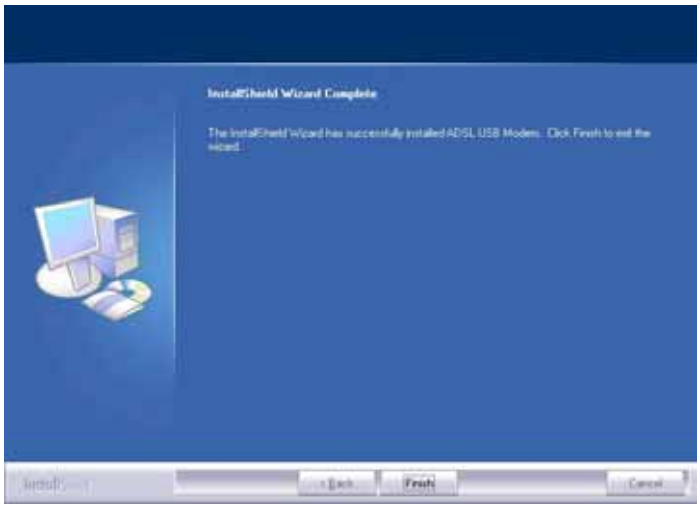
5. Setup enough information of coping the program files then click “Next”.



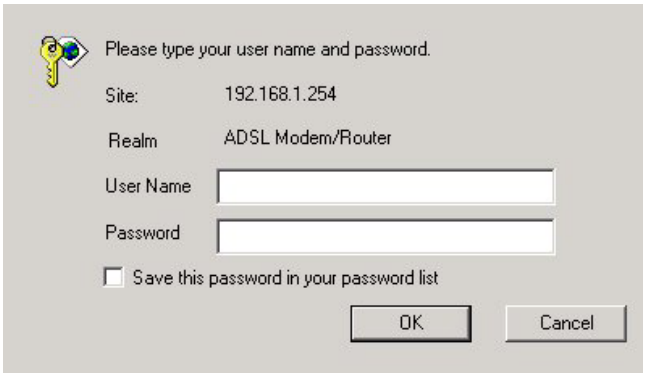
6. Please plug USB cable into ADSL USB Modem.



7. Click “Finish”.



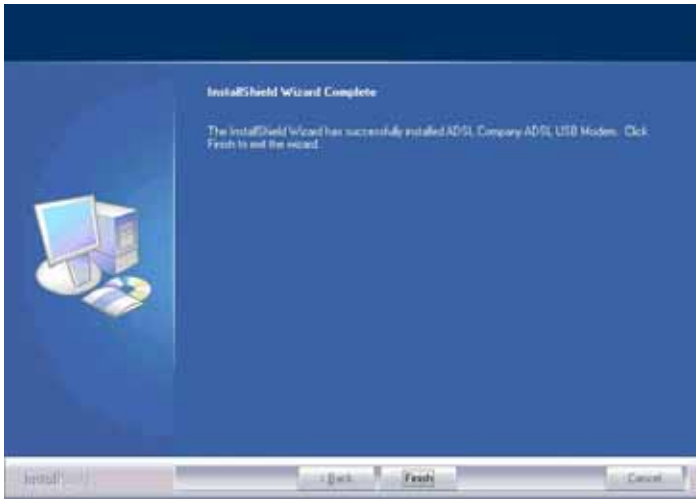
8. The windows will show the screen and please enter “User Name” and “Password” to configure the status report on web page.



For Windows 98 & Me：

1. Start Windows. Then insert the installation CD into the CD-ROM drive. In next window, to specify the driver directory such as “G:\USB Driver\setup98 Me_En_De_Fi” and to continue.

2. Choose the setup language and click “Next”. (There are three languages that user can choose: English, German, and French)
3. Then follow screen.
4. Click the type of setup you prefer, then click “Next”.
5. Setup enough information of coping the program files.
6. Select “I want to restart my computer now” and click OK.
7. Click “Finish”.



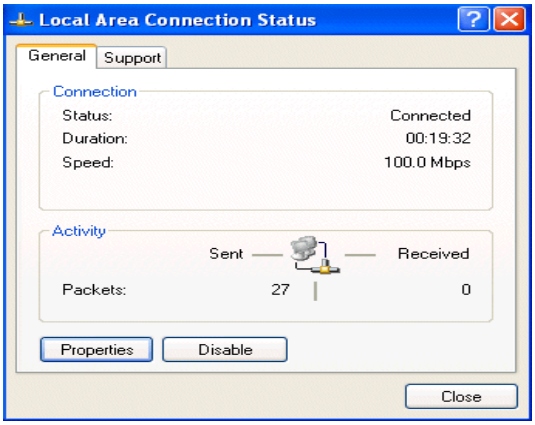
2.4 Configuring the Network Properties

Configuring PC in Windows XP

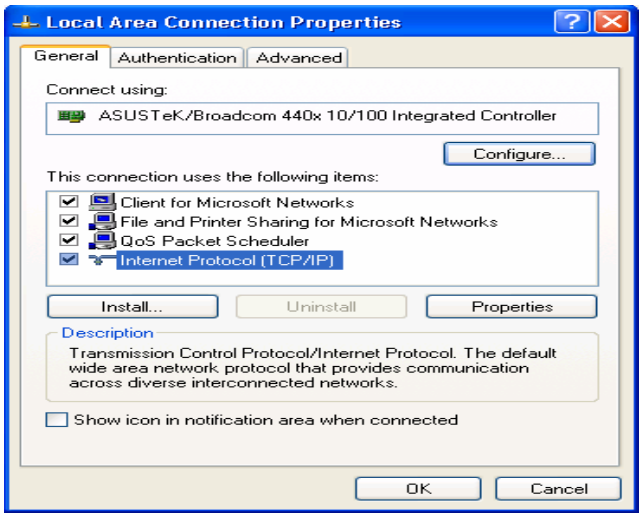
1. Go to **Start / Control Panel (in Classic View)**. In the Control Panel, double-click on **Network Connections**

2. Double-click **Local Area Connection**.

3. In the **Local Area Connection Status** window, click **Properties**.

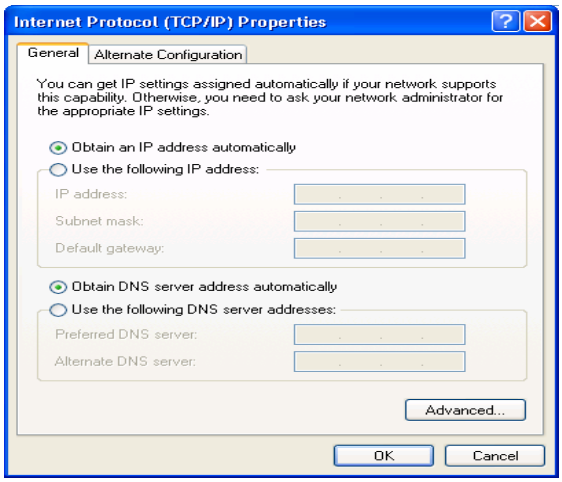


4. Select **Internet Protocol (TCP/IP)** and click **Properties**.



5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.

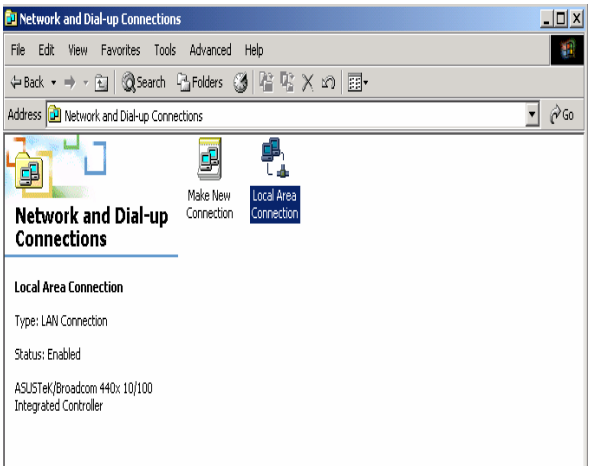
6. Click **OK** to finish the configuration.



Configuring PC in Windows 2000

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network and Dial-up Connections**.

2. Double-click **Local Area Connection**.

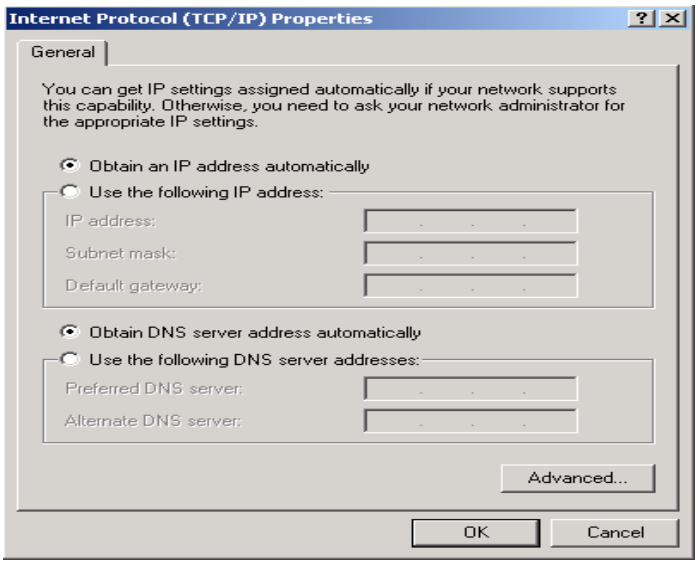


3. In the **Local Area Connection Status** window click **Properties**.

4. Select **Internet Protocol (TCP/IP)** and click **Properties**.

5. Select the **Obtain an IP address automatically** and the **Obtain DNS server address automatically** radio buttons.

6. Click **OK** to finish the configuration.

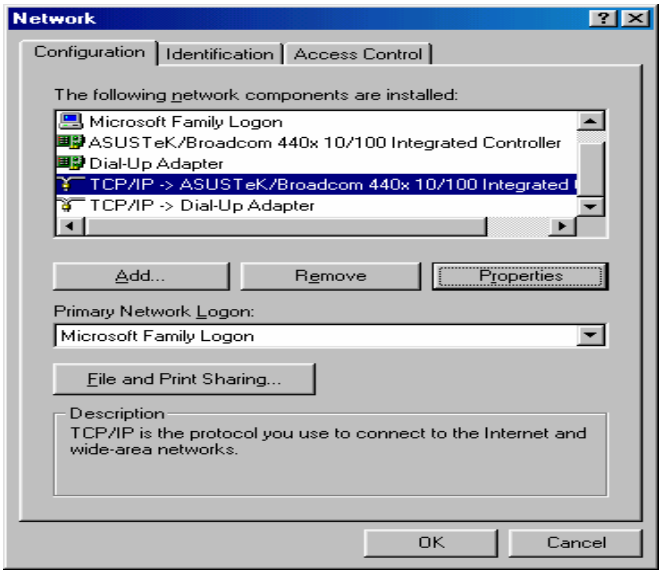


Configuring PC in Windows 98/Me

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on

Network and choose the **Configuration** tab.

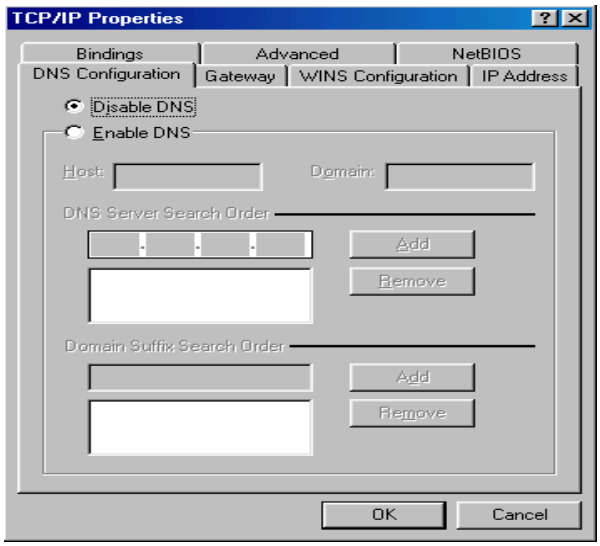
2. Select **TCP/IP ->**
   NE2000 Compatible, or the name of your Network Interface Card (NIC) in your PC.



3. Select the **Obtain an IP address automatically** radio button.

4. Then select the **DNS Configuration** tab.

5. Select the **Disable DNS** radio button and click **OK** to finish the configuration.



Configuring PC in Windows NT4.0

1. Go to **Start / Settings / Control Panel**. In the Control Panel, double-click on **Network** and choose the **Protocols** tab.

2. Select **TCP/IP Protocol** and click **Properties**.

3. Select the **Obtain an IP address from a DHCP server** radio button and click **OK**.

PS: If you configuring the Network Properties through USB Port (ADE-3410), please be note to specify a DNS IP address in PC and do not use “Obtain DNS server address automatically”.

3 Configuration

3.1 Determine your connection settings

Before you configure the router, you need to know the connection information supplied by your ADSL service provider.

3.2 Connecting the ADSL Router to your network

Unlike a simple hub or switch, the setup of the ADSL Router consists of more than simply plugging everything together. Because the Router acts as a DHCP server, you will have to set some values within the Router, and also configure your networked PCs to accept the IP Addresses the Router chooses to assign them.

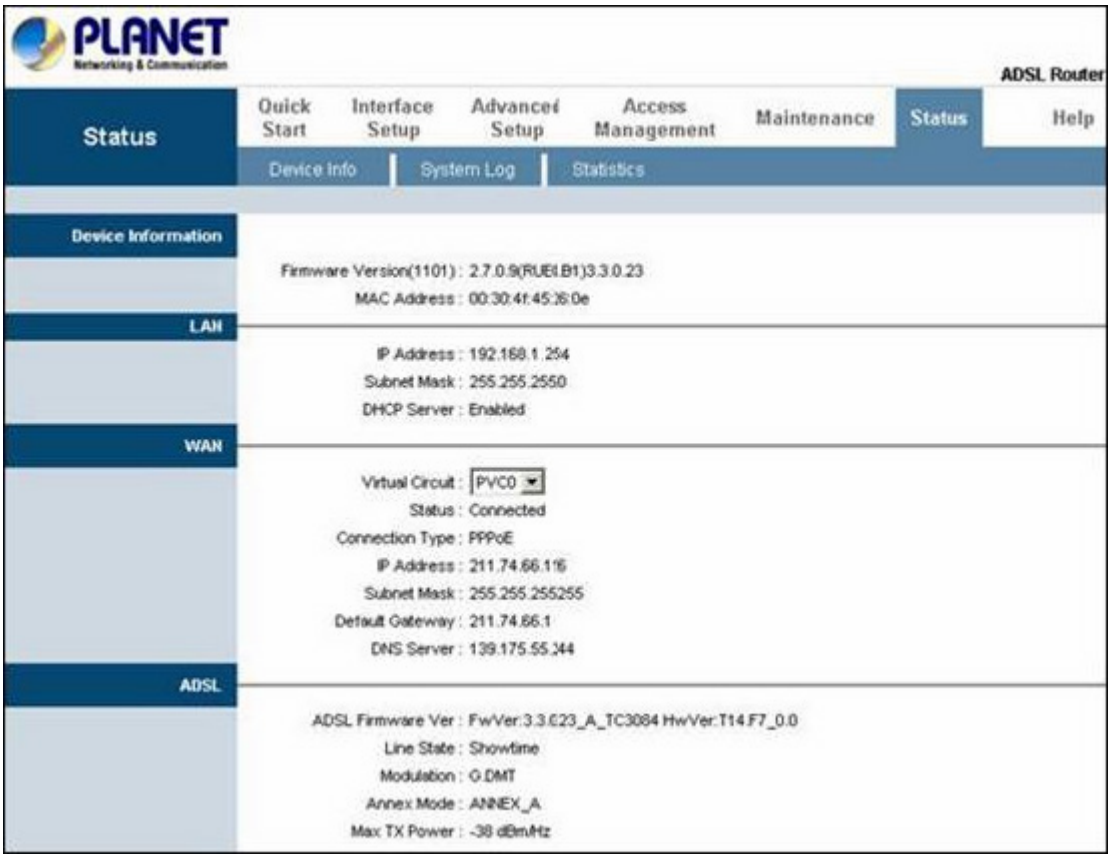
Generally there are several different operating modes for your applications. And you can know which mode is necessary for your system from ISP. These modes are router, bridge, PPPoE+NAT, and PPPoA+NAT.

3.3 Configuring with Web Browser

It is advisable to change the administrator password to safeguard the security of your network.

To configure the router, open your browser, type '**http://192.168.1.254**' into the address bar and click 'Go' to get to the login page.
Save this address in your Favorites for future reference.

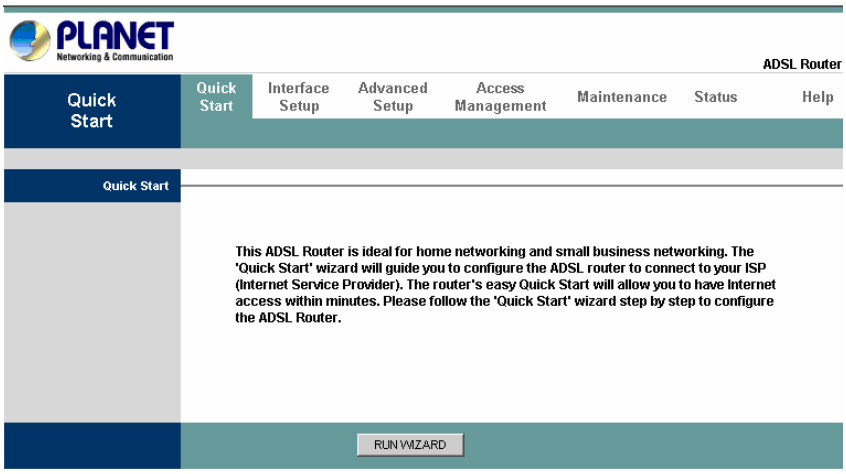
At the User name prompt, type '**admin**'. And the Password prompt, type '**admin**'. You can change these later if you wish. Click **'OK**'.



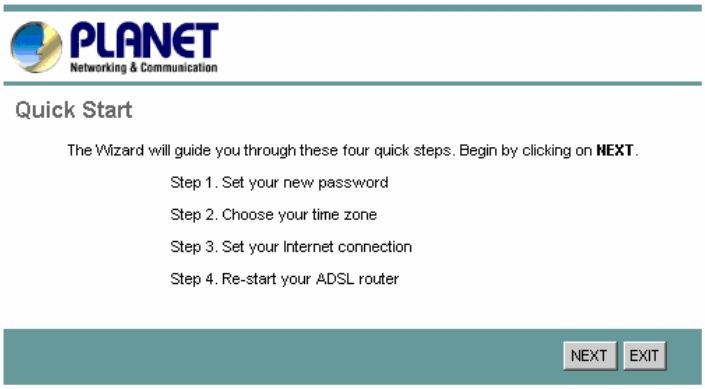
3.3.1 Quick Setup Guide

You can use "**Quick Setup**" to setup the router as follows, and the router will connect to the Internet via ADSL line.

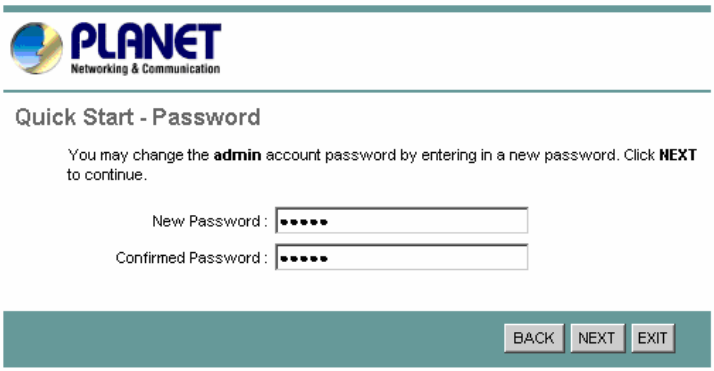
Click "**Quick Start**" to get into the quick setup procedures.



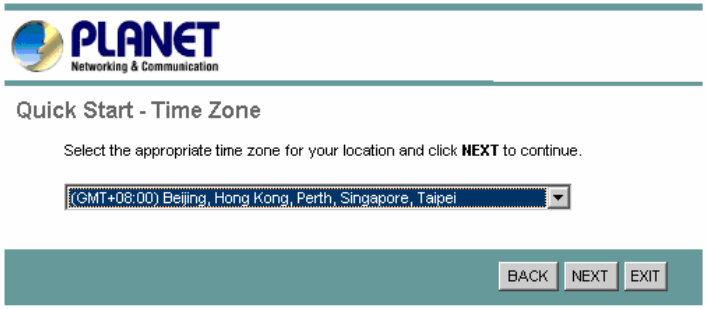
Click "**RUN WIZARD**" to start up this procedure.



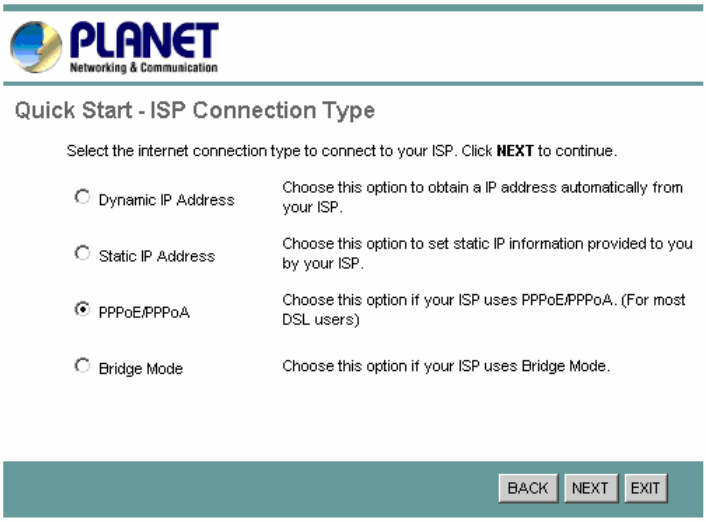
Step 1 - Click "Next" to setup your new administrator's password.



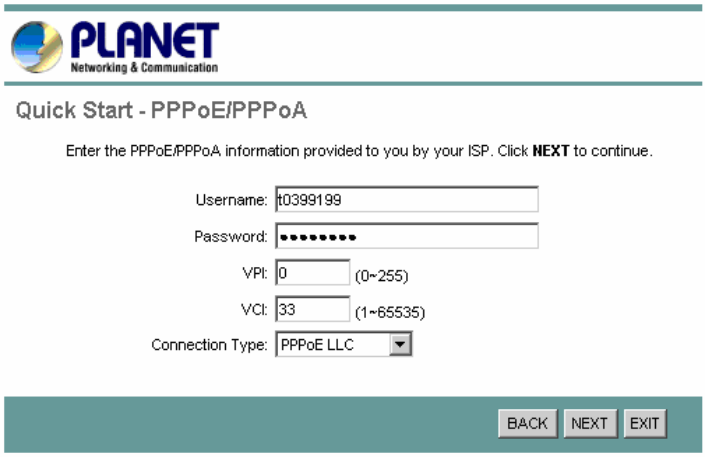
Step 2 - Click "**Next**" to setup your time zone.

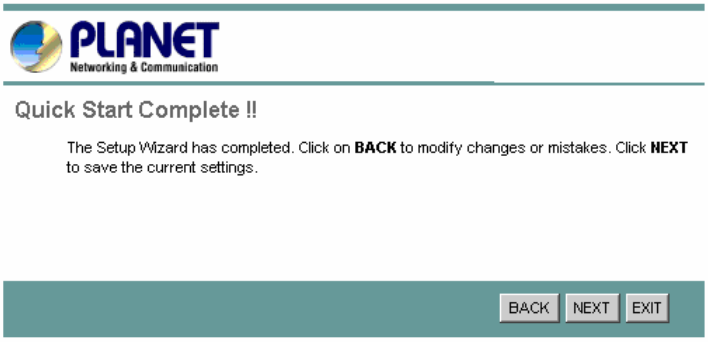


Step 3 - Click "**Next**" to setup your Internet connection type. You can have this information from your Internet Service Provider.



Enter the connection information provided by your ISP.

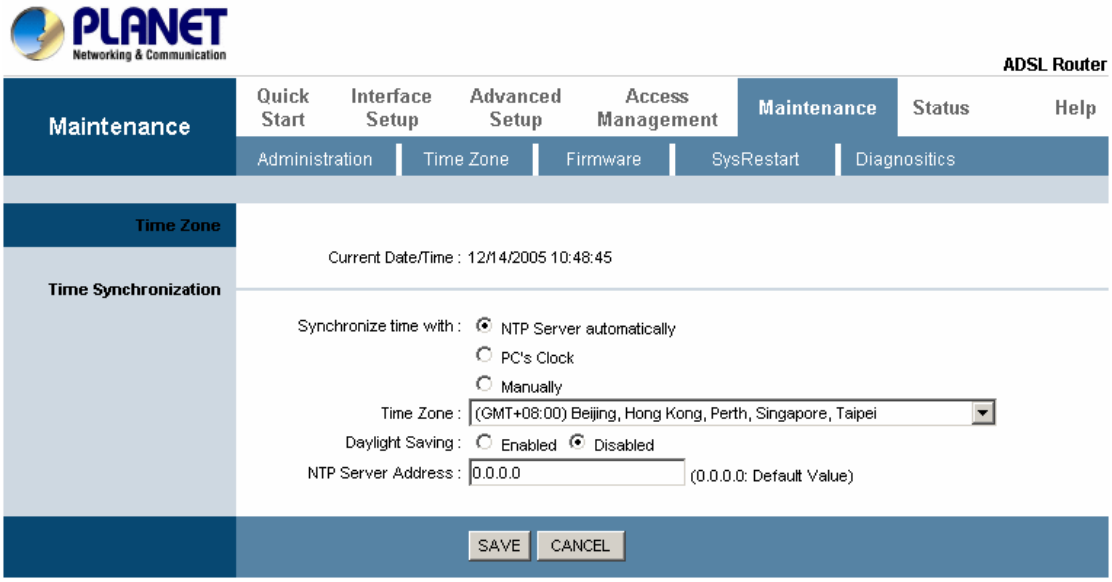

PLANET
Networking & Communication
Quick Start - PPPoE/PPPoA
Enter the PPPoE/PPPoA information provided to you by your ISP. Click NEXT to continue.
Username: t0399199
Password: ••••••••
VPI: 0 (0~255)
VCI: 33 (1~65535)
Connection Type: PPPoE LLC
BACK
NEXT
EXIT


PLANET
Networking & Communication
Quick Start Complete !!
The Setup Wizard has completed. Click on BACK to modify changes or mistakes. Click NEXT to save the current settings.
BACK
NEXT
EXIT

PLANET
Networking & Communication
Quick Start Completed !!
Saved Changes.
CLOSE

3.3.2 System Time

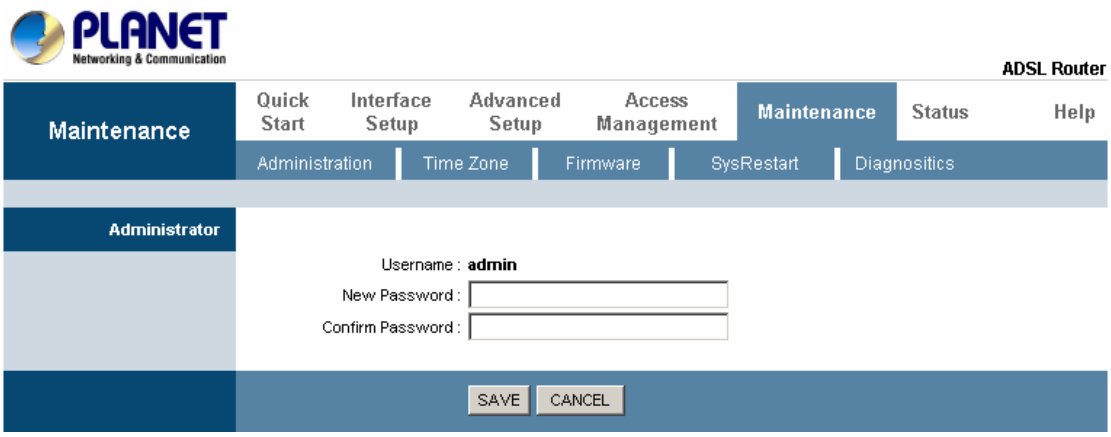
Go to **Maintenance->Time Zone** and select system time as you wish.



Connecting to a Simple Network Time Protocol (SNTP) server allows the router to synchronize the system clock to the global Internet.
The synchronized clock in the router is used to record the security log and control client filtering.

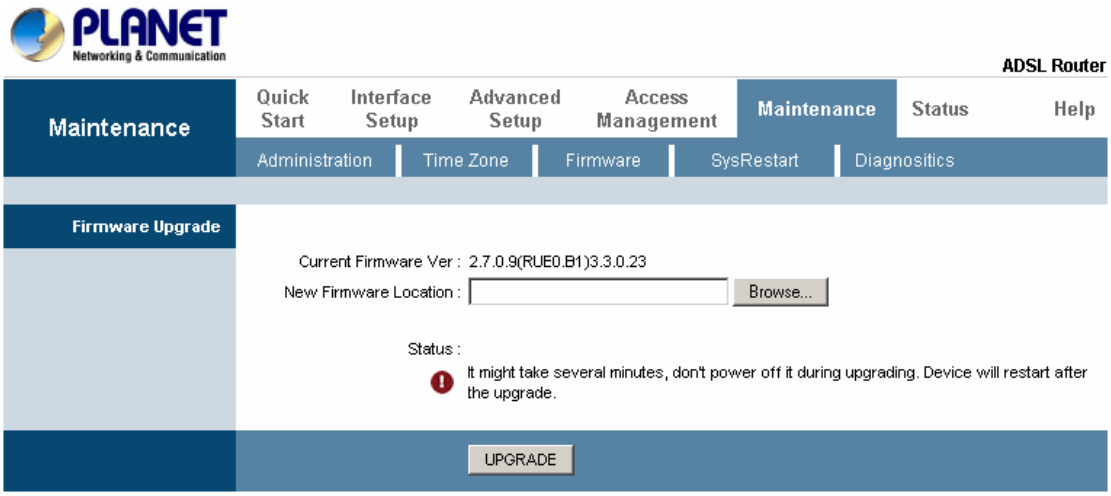
3.3.3 Admin Setting

Go to **Maintenance-> Administration** to set a new user's name and password to restrict management access to the router.
The default is **admin (User's name)** and **admin (Password)**



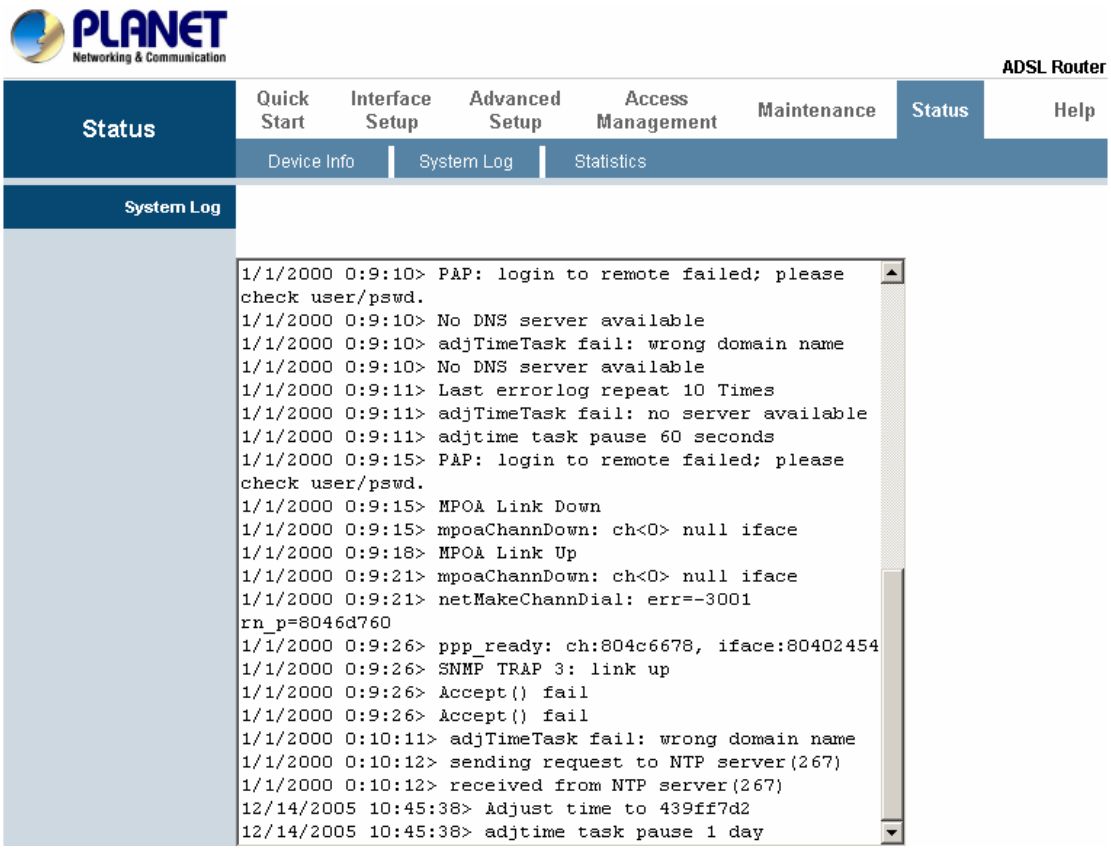
3.3.4 Firmware Update

Go to Maintenance -> Firmware to upgrade the firmware. The new firmware for your router can improve functionality and performance.
Enter the path and name of the upgrade file then click the **UPGRADE** button below. You will be prompted to confirm the upgrade.



3.3.5 System Log

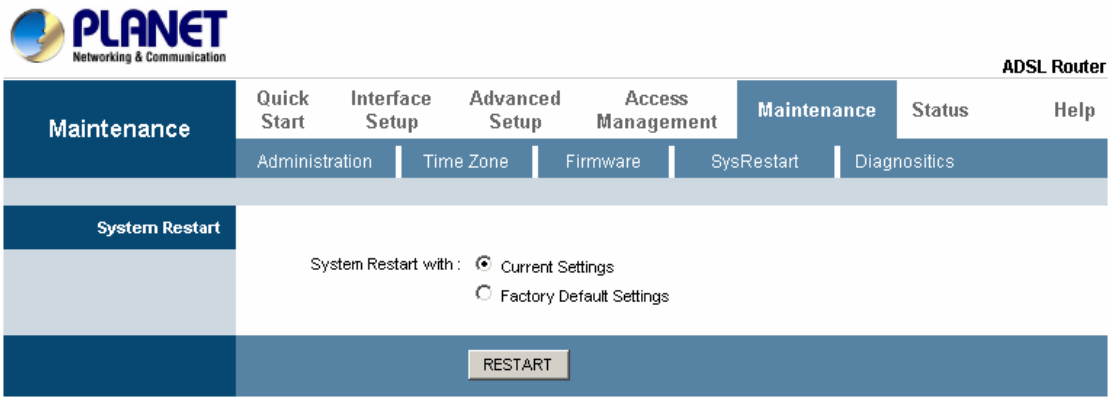
Go to **Status -> System Log** and you can see the system log file. Click "**Save Log**" to save system log file.



3.3.6 System Reset

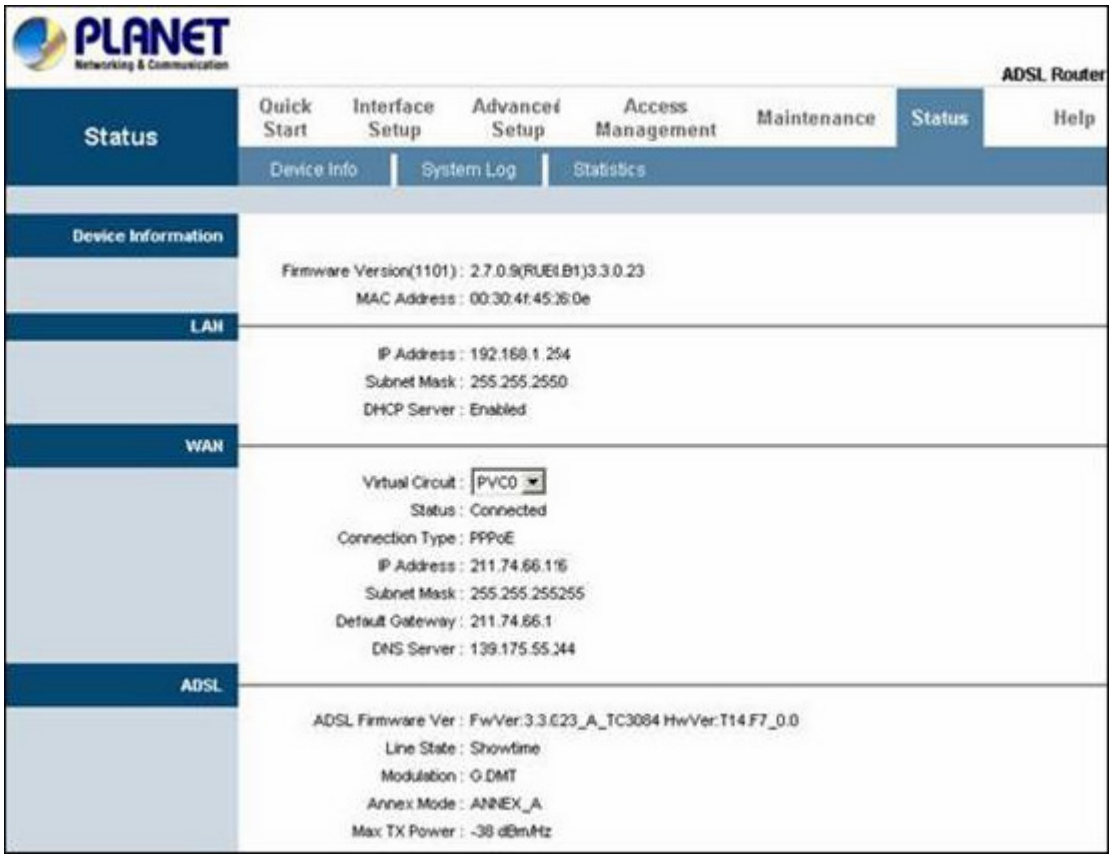
In the event that the router stops responding correctly or in some way stops functioning, you can perform a reset. Your settings will not be changed.
To perform the reset, select "**Current Setting**" and click on the "**RESTART**" button below. The router will reboot with current setting.

Select "**Factory Default Setting**" and click on the "**RESTART**" button, the router will reboot with factory default settings.



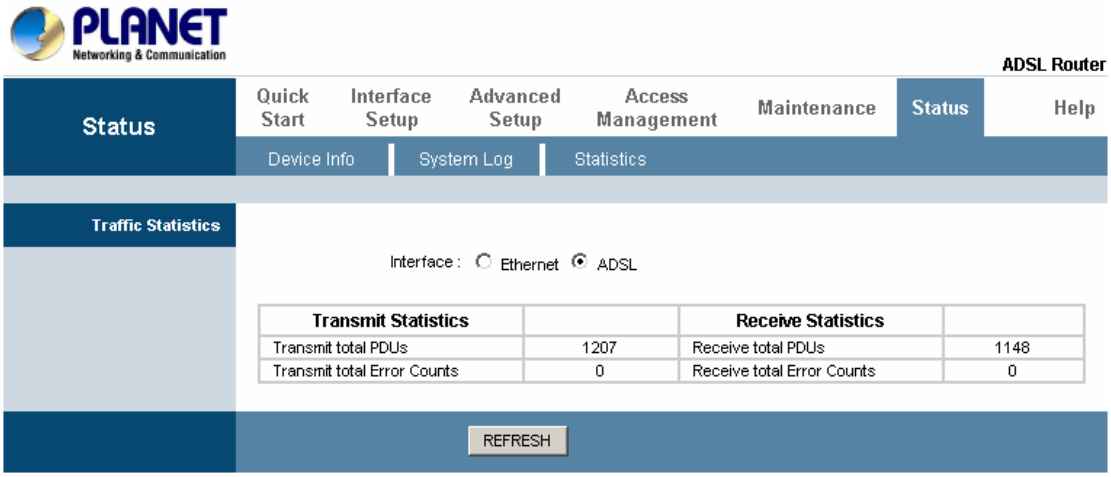
3.4.1 ADSL Status

Go to **Status->Device Info**. The 'ADSL Line Status' enables you to check the status of your ADSL connection including how fast data is being transferred.



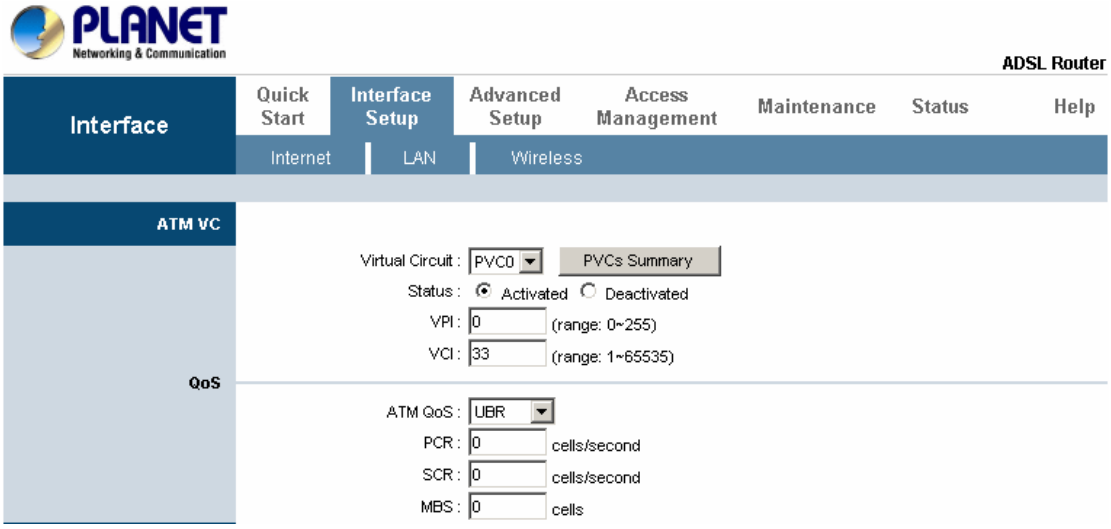
3.4.2 ADSL Statistics

Go to **Status-> Statistics** and select **ADSL** interface. You can see the traffic Statistics of ADSL interface.



3.4.3 VC Configuration

Go to **Interface Setup -> Internet**. To add or delete ADSL VC configuration, these information provide by ISP.



3.5.1 WAN Configuration

Go to **Interface Setup -> Internet**. The router can be connected to your service provider in any of the following ways.

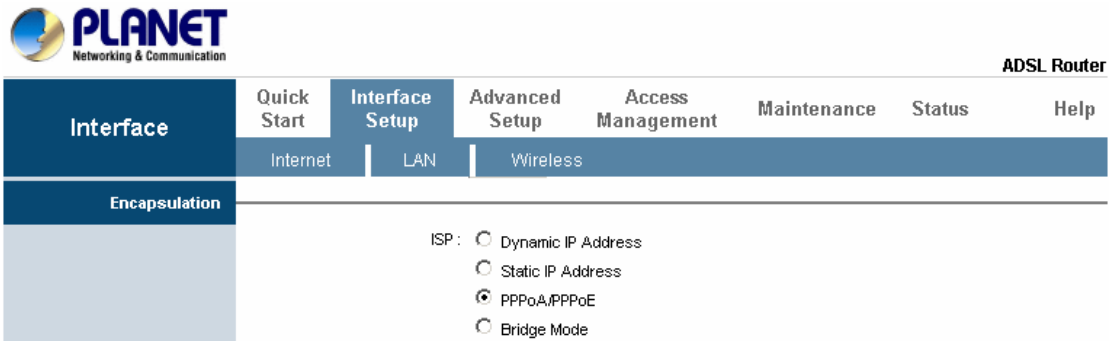
Dynamic IP Address: Obtain an IP address automatically from your service provider.

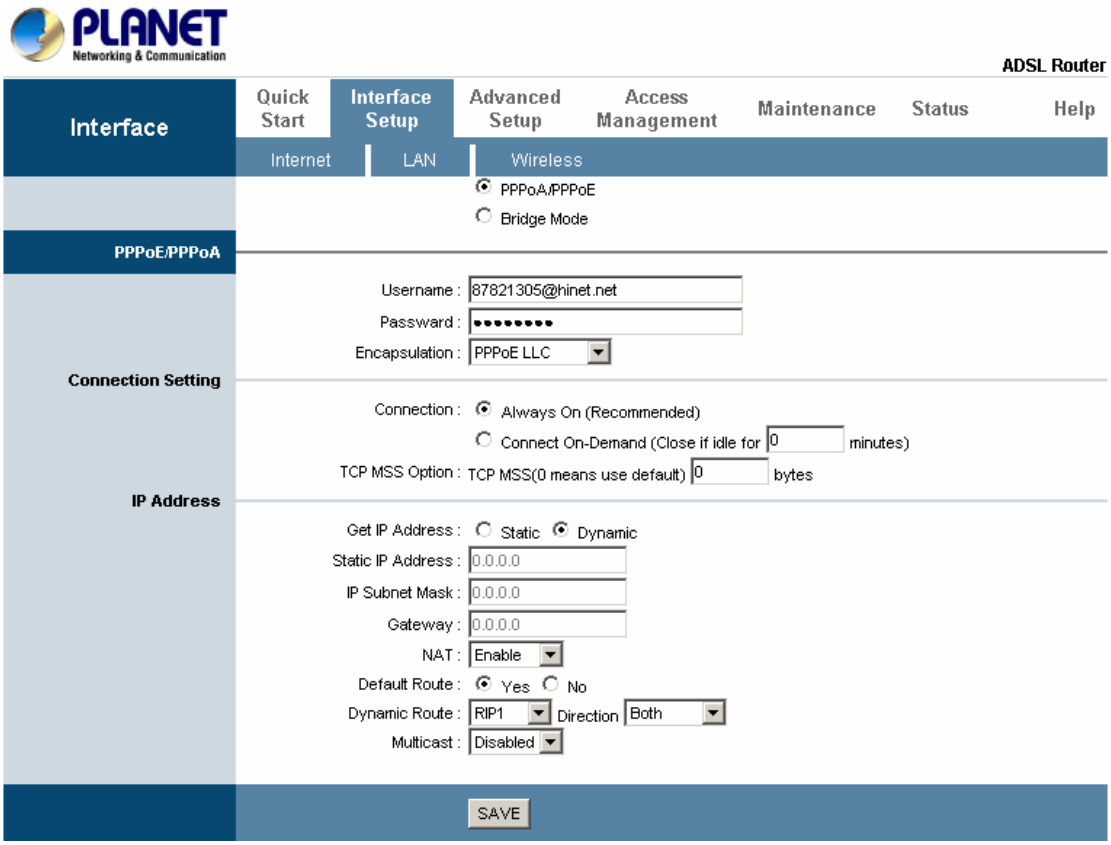
Static IP Address: Uses a static IP address. Your service provider gives a static IP address to access Internet services.

PPPoE: PPP over Ethernet is a common connection method used for xDSL

PPPoA: PPP over ATM is a common connection method used for xDSL

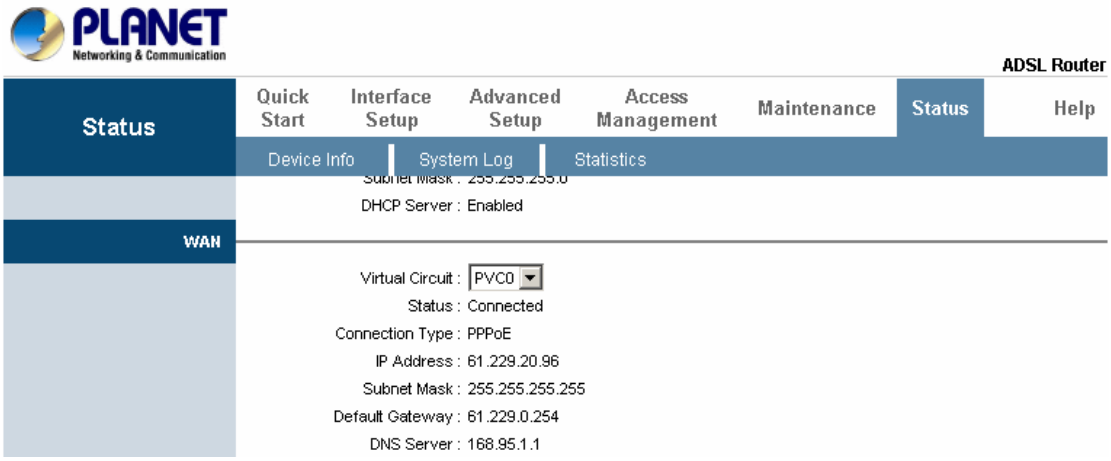
Bridge: Bridge mode is a common connection method used for xDSL modem.





3.5.2 WAN Status

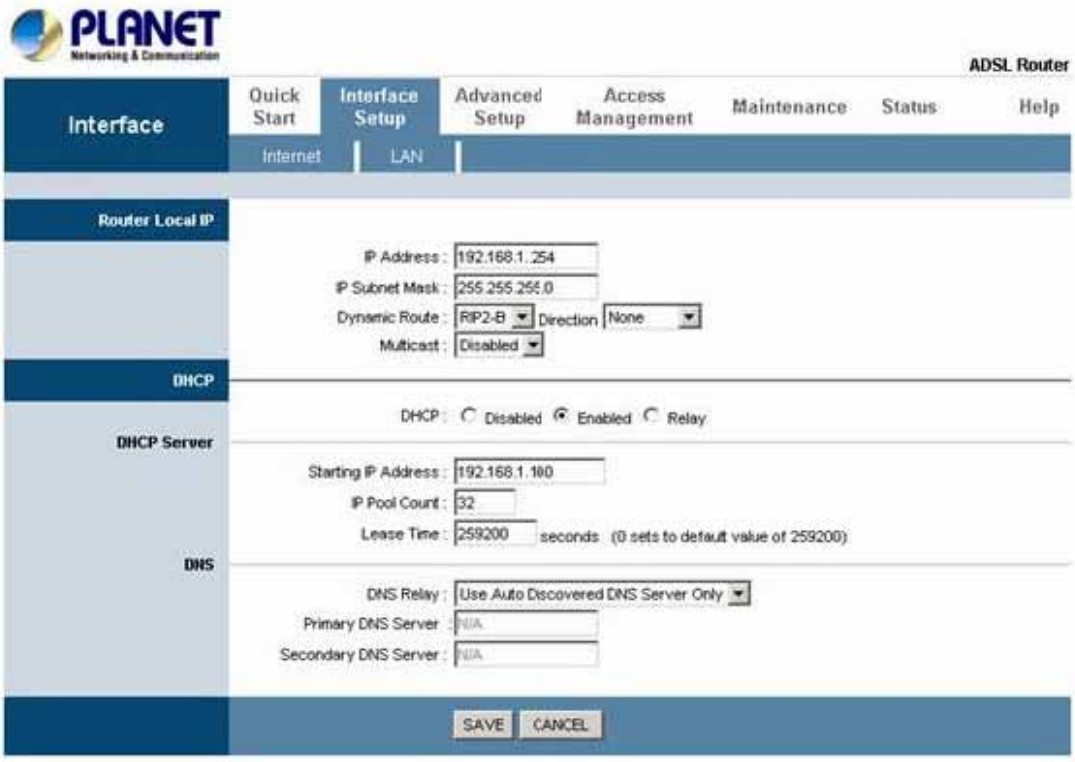
Go to **Status -> Device Info** and select **the Virtual Circuit** to see the connection status.



3.5.3 DNS

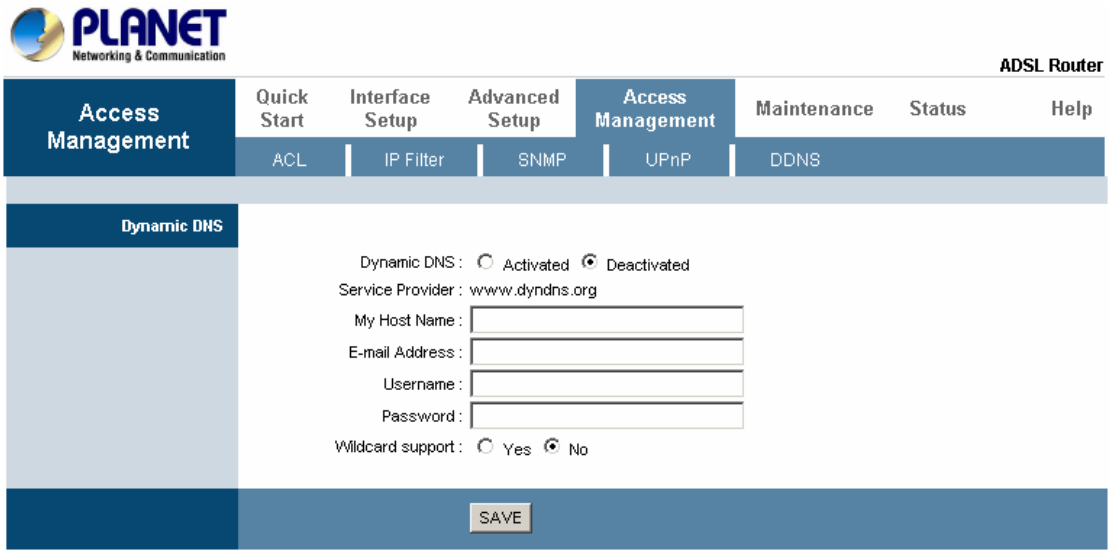
Go to **Interface -> LAN** to enable DHCP server. Then you can set DNS server for the router. A Domain Name system (DNS) server is like an index of IP addresses and Web addresses. If you type a Web address into you browser, a DNS server will find that name in its index and find the matching IP address.

Most ISPs provide a DNS server for speed and convenience. Since your Service Provider many connect to the Internet with dynamic IP settings, it is likely that the DNS server IP addresses are also provided dynamically. However, if there is a DNS server that you would rather use, you need to specify the IP address below.



3.5.4 DDNS

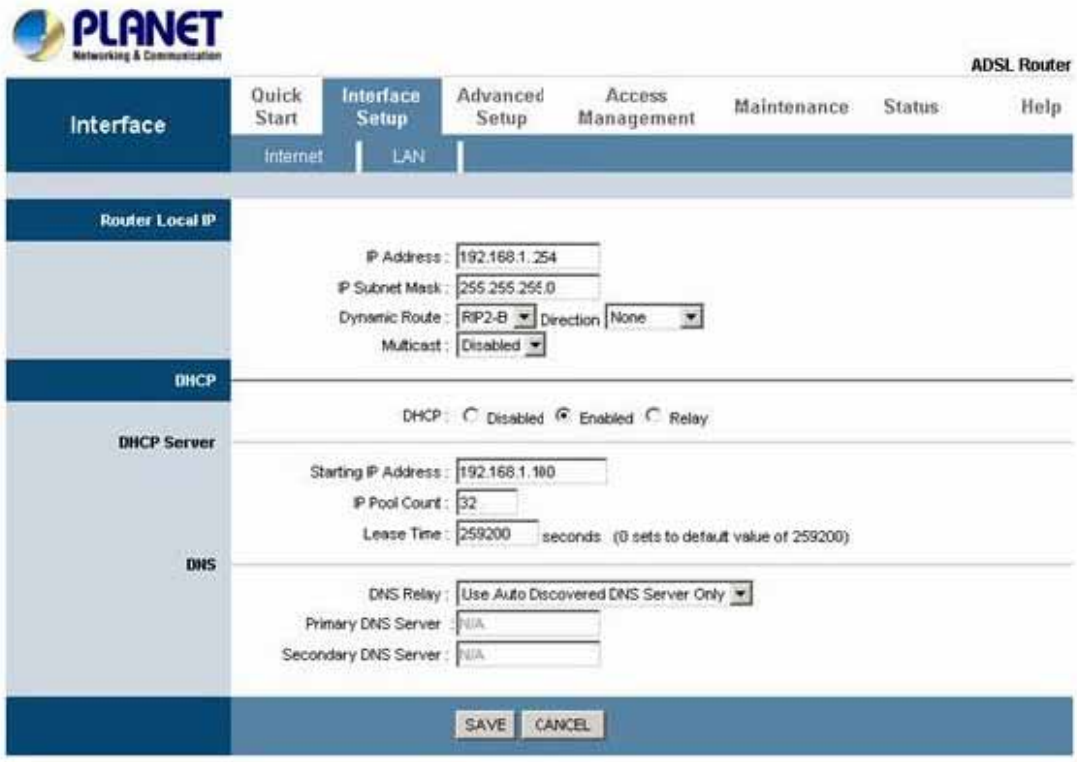
Go to **Access Management -> DDNS** to setup your DDNS parameters. Dynamic DNS allows you to update your dynamic IP address with one or many dynamic DNS services. So anyone can access your FTP or Web service on your computer using DNS-like address.



3.6.1 LAN Configuration

Go to Interface Setup -> LAN. The 'LAN Settings' option enables you to configure the LAN port.

If the DHCP Relay is selected, the DHCP requests from local PCs are forward to the DHCP server runs on WAN side. To have this function working properly, disable the NAT to run on router mode only, disable the DHCP server on the LAN port, and make sure the routing table has the correct routing entry.

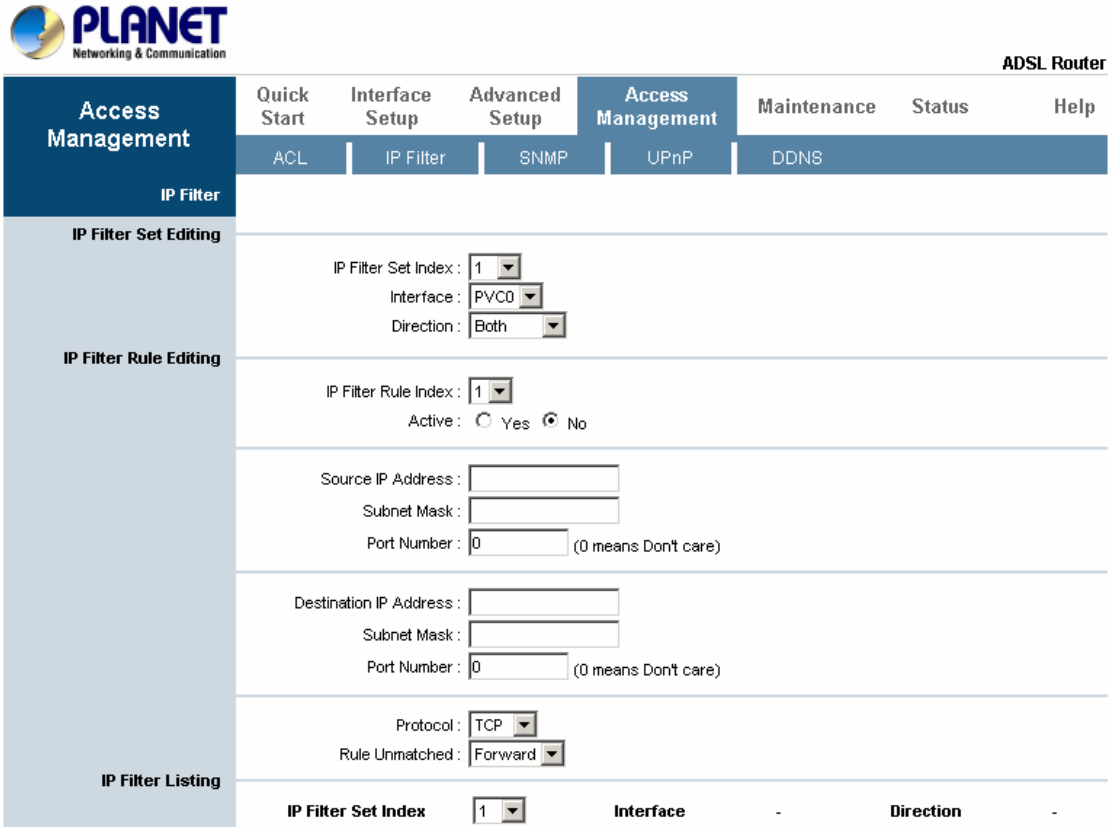


3.7.1 IP Filtering

Go to **Access Management -> IP Filtering** to block some packets form WAN.

The router provides extensive firewall protection by restricting connection parameters to limit the risk of intrusion and defending against a wide array of common hacker attacks.

“Block WAN Scan” allows you to prevent the hackers from testing the services of the router. Add IP filtering rule to block certain packet from WAN.



IP Filter Set Editing

IP filter Set Index: This is an item number.

Interface: Select which channel (PVC) to configure.

Direction: Select the access to the Internet (**“Outgoing”**), from the Internet (**“Incoming”**), or **Both.**

IP Filter Rule Editing

IP Filter Rule Index: This is an item number.

Active: Select **Yes** to enable IP filter rule.

Source IP Address: The source IP address or range of packets to be monitored.

Subnet Mask: It is the destination IP addresses based on above destination subnet IP.

Source Port Number: This Port or Port Ranges defines the port allowed to be used by the Remote/WAN to connect to the application. Default is set from range **0 ~ 65535.** It is recommended that this option be configured by an advanced user.

Destination IP Address: This is the destination subnet IP address.

Subnet Mask: It is the destination IP addresses based on above destination subnet IP

Destination Port Number: This is the Port or Port Ranges that defines the application.

Protocol: It is the packet protocol type used by the application. Select the **TCP**, **UDP,** or, **ICMP.**

Rule Unmatched: Select action for the traffic unmatched current rule. Select **Forward** to leave and pass through it. Select **NEXT** to check it by the next rule.

IP Filter Listing

IP Filter Set Index: This is an item number.

Active: Whether the connection is currently active.

Src IP Mask: The source IP address or range of packets to be monitored.

Dest IP Mask: This is the destination subnet IP address.

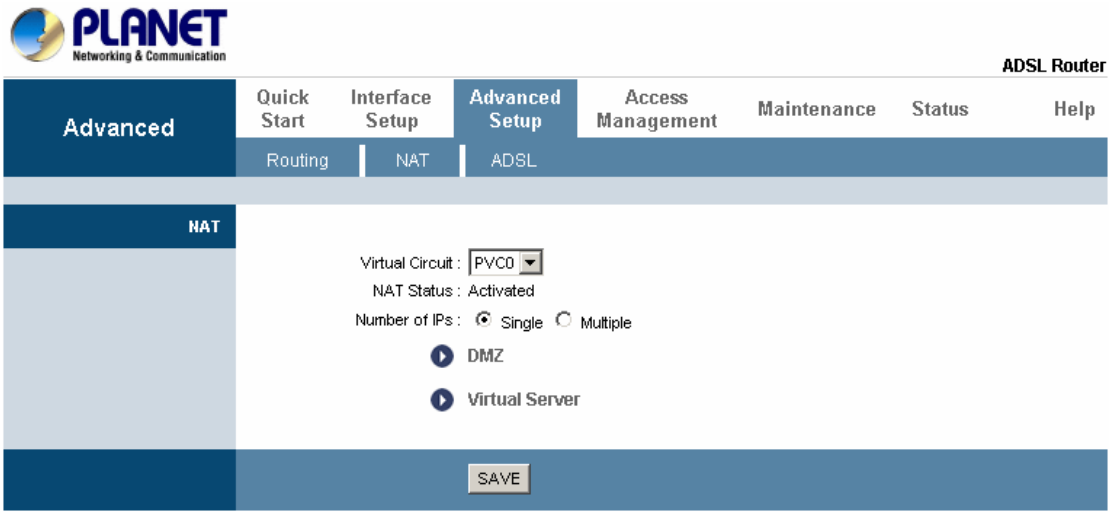
Src port: This Port or Port Ranges defines the port allowed to be used by the Remote/WAN to connect to the application. Default is setting from range **0 ~ 65535.** It is recommended that this option be configured by an advanced user.

Dest Port: This is the Port or Port Ranges that defines the application.

Protocol: It is the packet protocol type used by the application. Select **TCP, UDP,** or **ICMP.**

3.8.1 NAT Setting

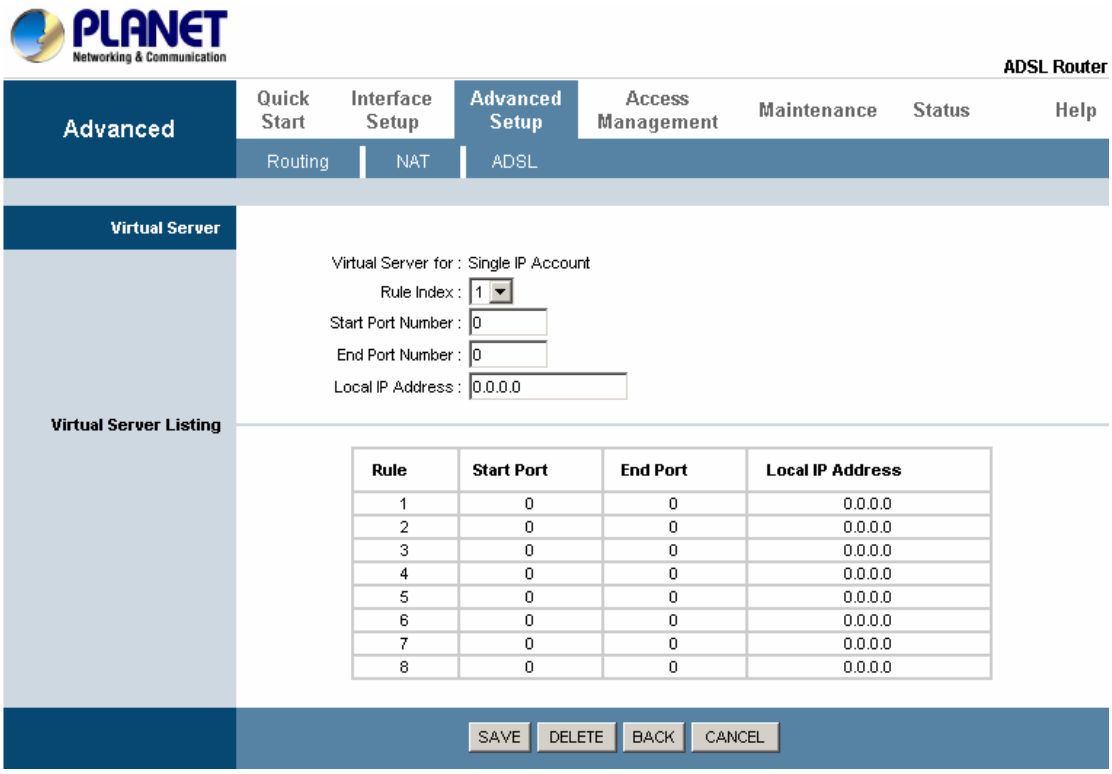
Go to **Advanced Setup->NAT** to setup the NAT features. Network Address Translation (NAT) allows multiple users at your local site to access the Internet through a single public IP address or multiple public IP addresses. NAT can also prevent hacker attacks by mapping local addresses to public addresses for key services such as the Web or FTP.



3.8.2 Virtual Server

Go to **Advanced Setup ->NAT -> Virtual Server** to set virtual server as you need. (known as Port Mapping).

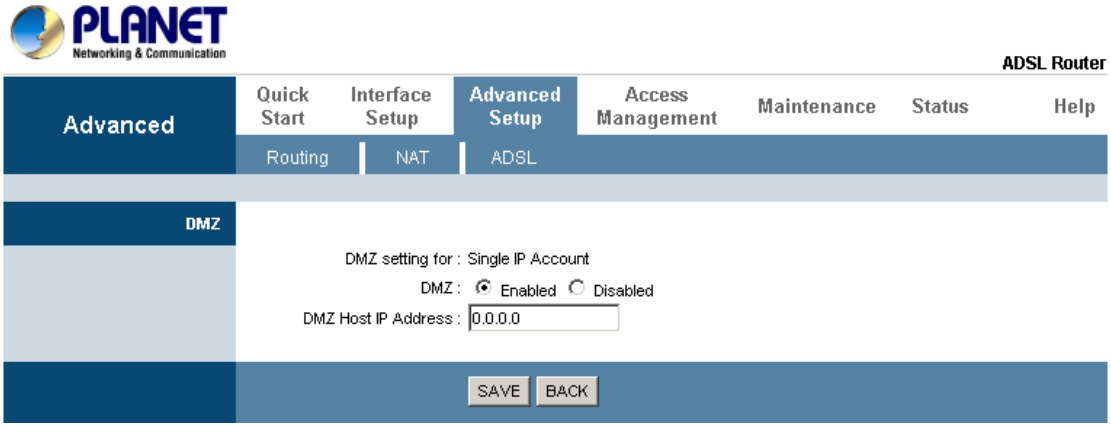
You can configure the router as a virtual server so that remote users accessing services such as the Web or FTP at your local site via public IP addresses can be automatically redirected to local servers configured with private IP addresses. In other words, depending on the requested service (TCP/UDP port numbers), the router redirects the external service request to the appropriate server (located at another internal IP address). For some applications, you need to assign a set or a range of ports (example 4000-5000) to a specified local machine to route the packets. The router allows the user to configure the needed port mappings to suit such applications.



3.8.3 DMZ Setting

Go to **Advanced Setup ->NAT -> DMZ** to set DMZ parameters.

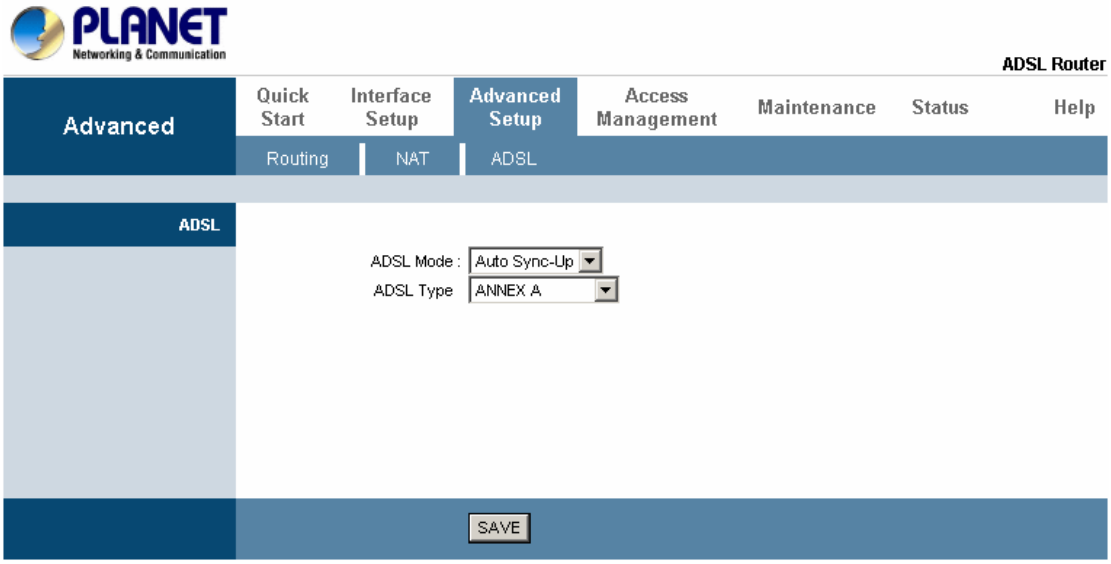
If you have a local client PC that cannot run an Internet application properly from behind the NAT firewall, you can open the client up to unrestricted two-way Internet access by defining a virtual DMZ Host.



3.8.4 ADSL Type Setting

Go to **Advanced Setup ->ADSL** to set different ADSL connection

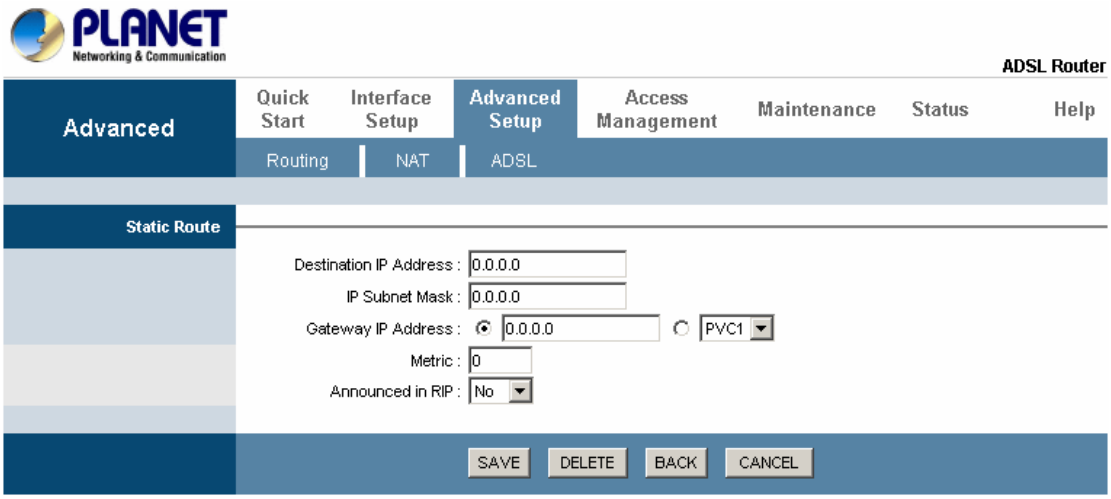
If you meet an ADSL connection problem, you can select a different ADSL connection type to get more fast connection.



3.9.1 Static Routing

Go to **Advance Setup -> Routing ->Add** to setup static route features.

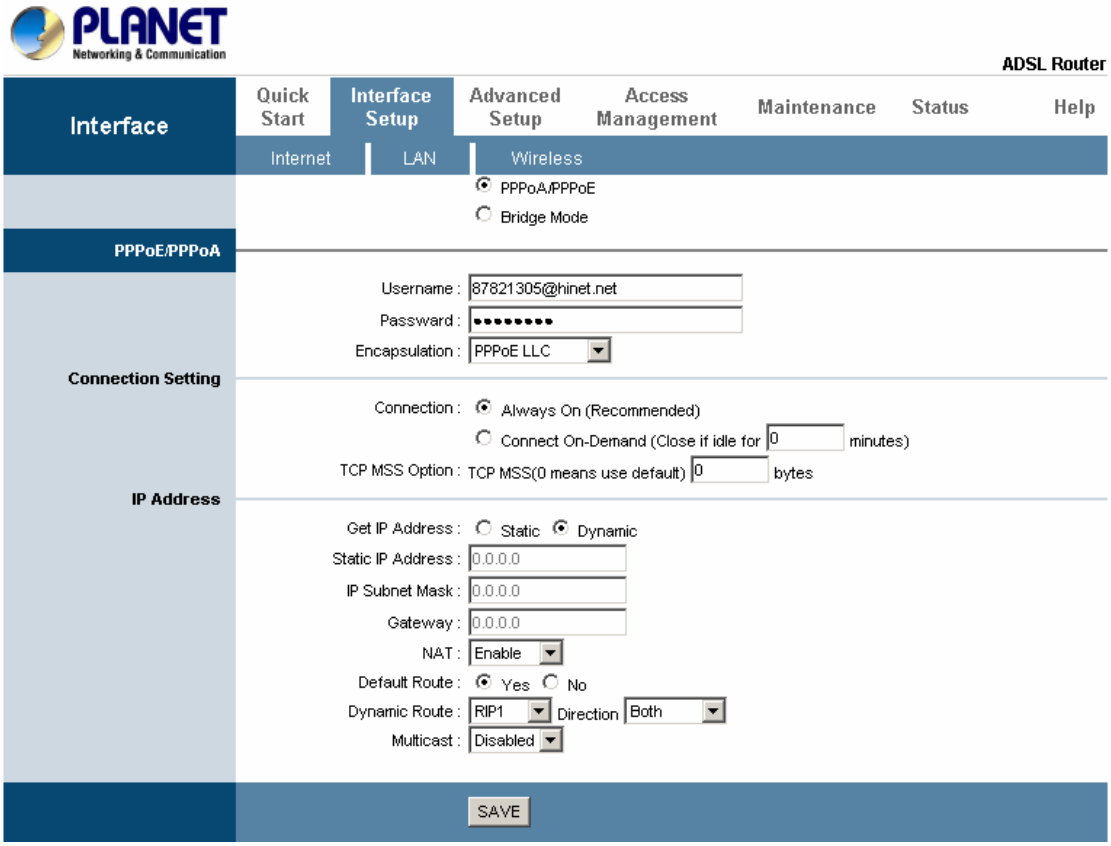
The static routing function determines the path that router follows over your network before and after it passes through your router. You can use static routing to allow different IP domain users to access the Internet through this device.



3.9.2 Dynamic Routing

Go to **Interface Setup -> Internet** to select Dynamic Route as you need.

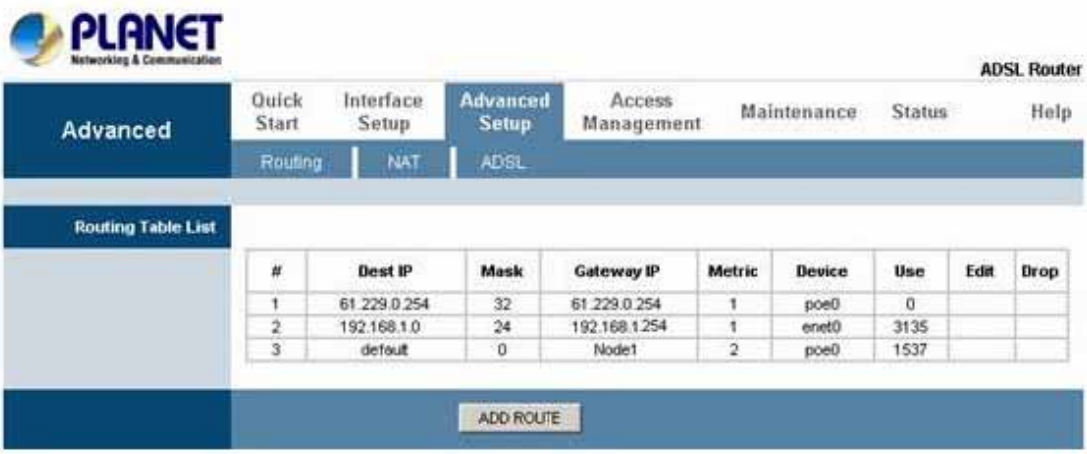
The dynamic routing feature of the router can be used to allow the router to automatically adjust to physical changes in the network's layout. The router uses the dynamic RIP protocol. It determines the route that the network packets take based on the fewest number of hops between the source and the destination. The RIP protocol regularly broadcasts routing information to other routers on the network.



3.9.3 Routing Table

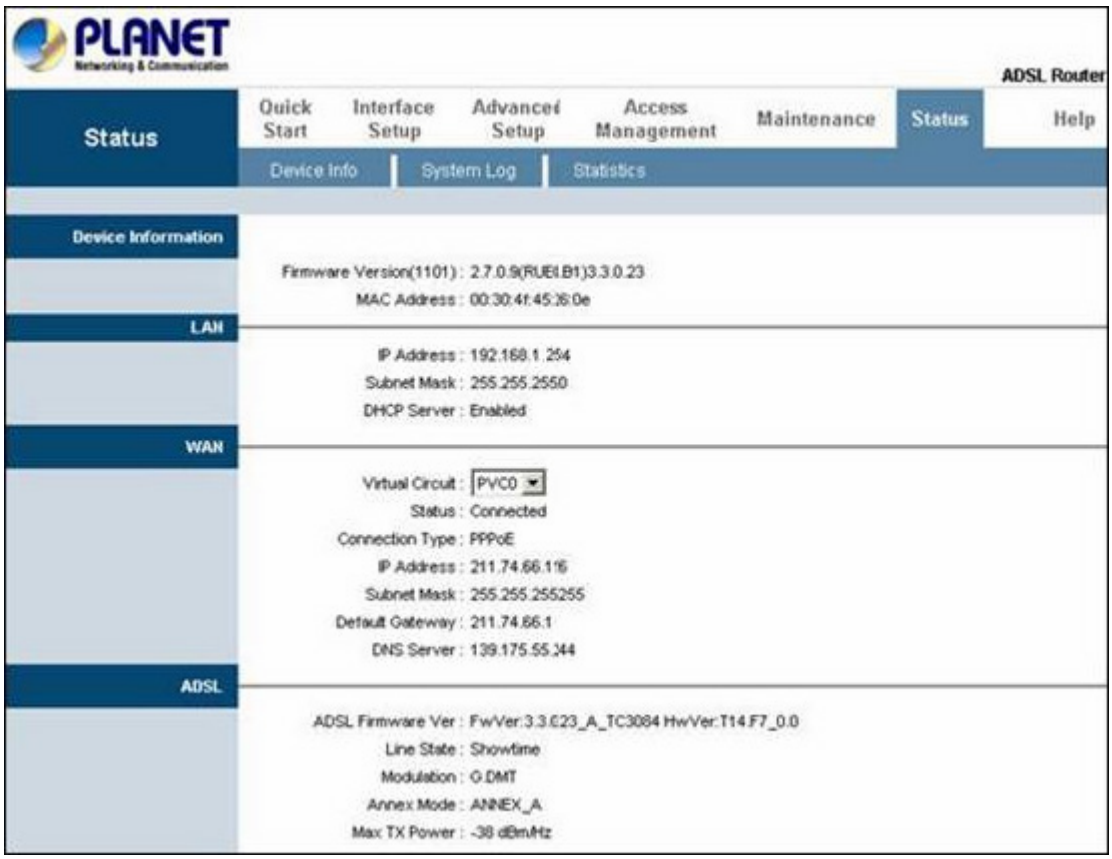
Go to **Advance Management -> Routing** to see the Routing Table.

The Routing table allows you to see how many routings on your routing table and interface information



3.10.1 System Status

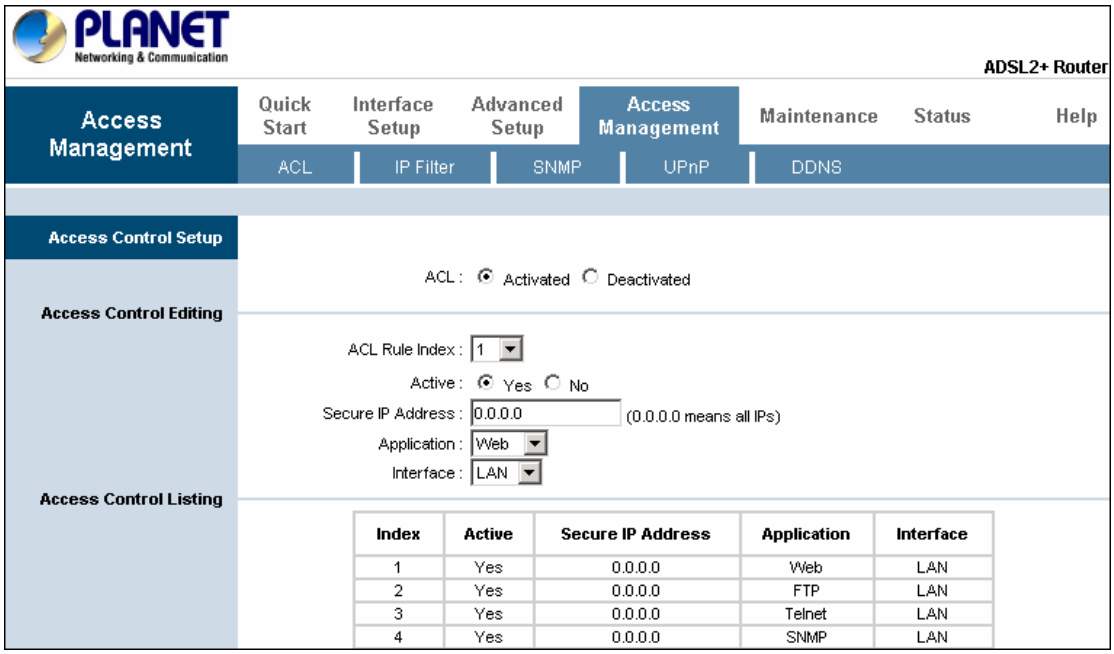
Go to **Status -> Device Info** to see the router's information. The System Status page shows the WAN, LAN and the router's firmware version.



3.11.1 Access Control List

Go to **Access Management -> ACL** to see the Access Control List. Access Control Listing allows you to determine which services/protocols can access which devices interface from which computers.

You can configure the router for remote Telnet access or upload and download router firmware and configuration files by using FTP. To use this feature, your computer must have an FTP client. The device's embedded Web configurator for configuration and file management.



ACL Rule Index: This is an item number.

Secure IP Address: The default 0.0.0.0 allows any client to use this service to remotely manage the device. Type an IP address to restrict access to a client with a matching IP address.

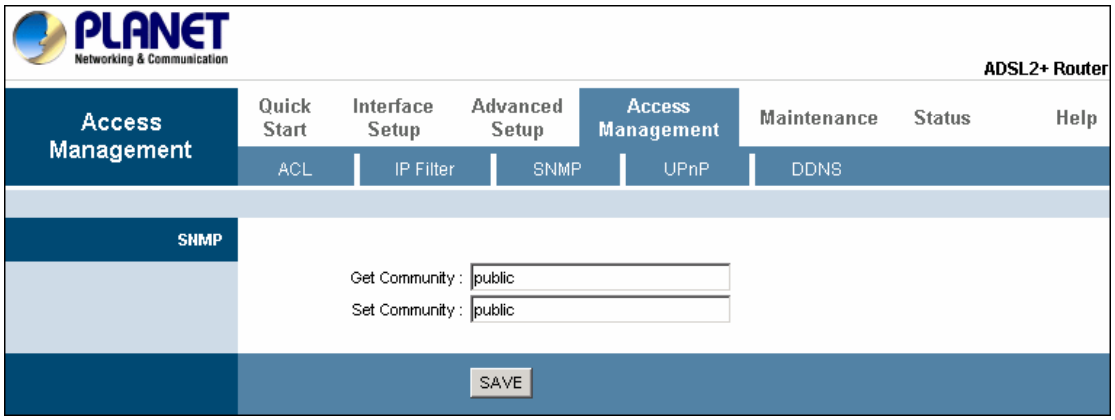
Application: Choose a service that you may use to remotely manage the device.

Interface: Select the access interface. Choices are **LAN**, **WAN,** and **Both**.

3.12.1 Simple Network Management Protocol

Go to **Access Management -> SNMP** to see the Simple Network Management Protocol (SNMP). SNMP is a protocol used for exchanging management information

between network devices. SNMP is a member of the TCP/IP protocol suite. The device supports SNMP agent functionality which allows a manager station to manage and monitor the router through the network.



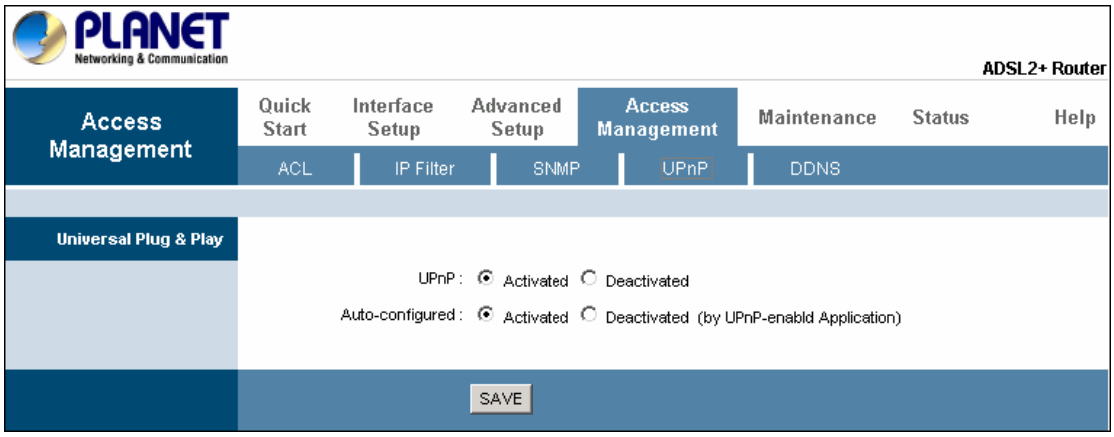
Get Community: Type the Get Community which is the command for the incoming Get and GetNext requests from the management station.

Set Community: Type the Set Community which is the command for incoming Set requests from the management station.

3.13.1 Universal Plug and Play

Go to **Access Management -> UPnP** to see the Universal Plug and Play (UPnP). UPnP offers peer-to-peer network connectivity for PCs and other network devices, along with control and data transfer between devices. UPnP offers many advantages for users running NAT routers through UPnP NAT Traversal, and on supported systems makes tasks such as port forwarding much easier by letting the application control the required settings, removing the need for the user to control advanced configuration of their device.

Both the user's Operating System and the relevant application must support UPnP in addition to the router. Windows XP and Windows Me natively support UPnP (when the component is installed), and Windows 98 users may install the Internet Connection Sharing client from Windows XP in order to support UPnP. Windows 2000 does not support UPnP.

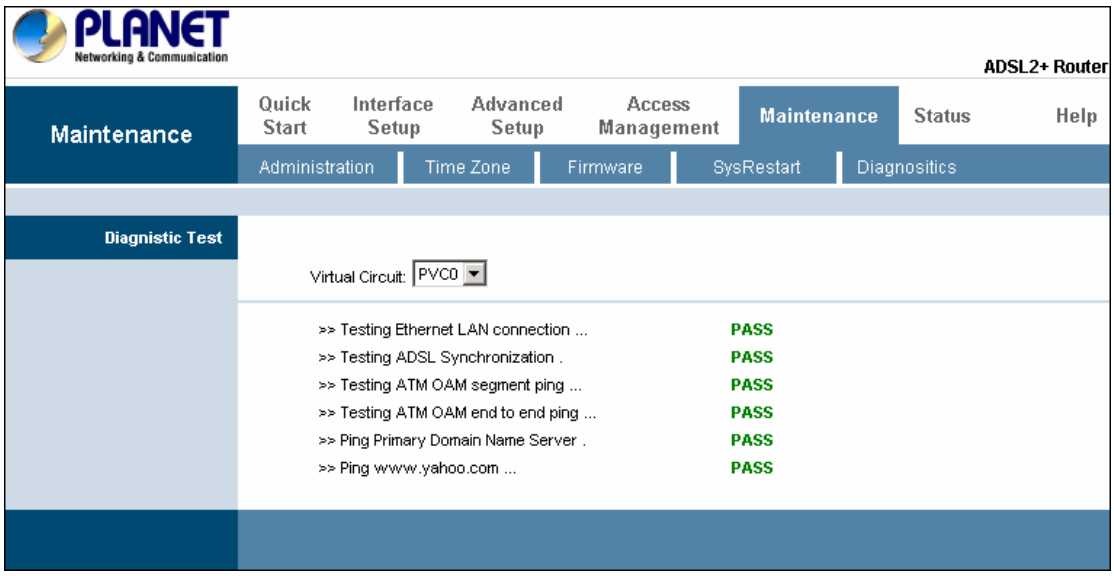


UPnP: Select this checkbox to activate UPnP. Be aware that anyone could use an UPnP application to open the Web configurator's login screen without entering the device's IP address

Auto-configured: Select this check box to allow UPnP-enabled applications to automatically configure the device so that they can communicate through the device, for example by using NAT traversal, UPnP applications automatically reserve a NAT forwarding port in order to communicate with another UPnP enabled device. This eliminates need to manually configure port forwarding for the UPnP enabled application.

3.14.1 System Diagnostics

Go to **Maintenance -> Diagnostics** to see the Diagnostic Test. This page shows the test results for the connectivity of the physical layer and protocol layer for both LAN and WAN sides.



Appendix A: Glossary

Address mask
A bit mask select bits from an Internet address for subnet addressing. The mask is 32 bits long and selects the network portion of the Internet address
and one or more bits of the local portion. Sometimes it called subnet mask.

AAL5
ATM Adaptation Layer - This layer maps higher layer user data into ATM cells, making the data suitable for transport through the ATM network.

ADSL
Asymmetric digital subscriber line

ATM
Asynchronous Transfer Mode - A cell-based data transfer technique in which channel demand determines packet allocation. ATM offers fast packet technology,
real time, and demand led switching for efficient use of network resources.

AWG
American Wire Gauge - The measurement of thickness of a wire

Bridge
A device connects two or more physical networks and forward packets between them. Bridges can usually be made to filter packets, that is, to forward only certain traffic. Related devices are repeaters which simply forward electrical signals from one cable to the other and full-fledged routers which make routing decisions based on several criteria.

Broadband
Characteristic of any network multiplexes independent network carriers onto a single cable. Broadband technology allows several networks to coexist on one single cable; traffic from one network does not interfere with traffic from another. Broadcast a packet delivery system where a copy of a given packet is given to all hosts attached to the network. Example: Ethernet.

CO
Central Office. Refers to equipment located at a Telco or service provider's office.

CPE
Customer Premises Equipment located in a user's premises

DHCP (Dynamic Host Configuration Protocol)
DHCP is software that automatically assigns IP addresses to client stations logging onto a TCP/IP network. DHCP eliminates having to manually assign permanent IP addresses to every device on your network. DHCP software typically runs in servers and is also found in network devices such as Routers.

DMT
Discrete Multi-Tone frequency signal modulation

Downstream rate
The line rate for return messages or data transfers from the network machine to the user's premises machine.

DSLAM
Digital Subscriber Line Access Multiplex

Dynamic IP Addresses
A dynamic IP address is an IP address that is automatically assigned to a client station (computer, printer, etc.) in a TCP/IP network. Dynamic IP addresses are typically assigned by a DHCP server, which can be a computer on the network or another piece of hardware, such as the Router. A dynamic IP address
may change every time your computer connects to the network.

Encapsulation
The technique layer protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the physical layer, followed by a header from the network layer (IP), followed by a header from the transport
layer (TCP), and followed by the application protocol data.

Ethernet
One of the most common local area network (LAN) wiring schemes, Ethernet has a

transmission rate of 10 Mbps.

FTP
File Transfer Protocol. The Internet protocol (and program) transfer files between hosts.

Hop count
A measure of distance between two points on the Internet. It is equivalent to the number of gateways that separate the source and destination.

HTML
Hypertext Markup Language - The page-coding language for the World Wide Web.

HTML browser
A browser used to traverse the Internet, such as Netscape or Microsoft Internet Explorer.

http
Hypertext Transfer Protocol - The protocol carry world-wide-web (www) traffic between a www browser computer and the www server being accessed.

ICMP
Internet Control Message Protocol - The protocol handle errors and control messages at the IP layer. ICMP is actually part of the IP protocol.

Internet address
An IP address is assigned in blocks of numbers to user organizations accessing the Internet. These addresses are established by the United States Department of Defense's Network Information Center. Duplicate addresses can cause major problems on the network, but the NIC trusts organizations to use individual addresses responsibly. Each address is a 32-bit address in the form of x.x.x.x where x is an eight- bit number from 0 to 255. There are three classes: A, B and C, depending on how many computers on the site are likely to be connected.

Internet Protocol (IP)
The network layer protocol for the Internet protocol suite

IP address
The 32-bit address assigned to hosts that want to participate in a TCP/IP Internet.

ISP
Internet service provider - A company allows home and corporate users to connect to the Internet.

MAC
Media Access Control Layer - A sub-layer of the Data Link Layer (Layer 2) of the ISO OSI Model responsible for media control.

MIB
Management Information Base - A collection of objects can be accessed via a network management protocol, such as SNMP and CMIP (Common Management Information Protocol).

NAT
Network Address Translation - A proposal for IP address reuse, where the local IP address is mapped to a globally unique address.

NVT
Network Virtual Terminal

PAP
Password Authentication Protocol

PORT
The abstraction used in Internet transport protocols to distinguish among multiple simultaneous connections to a single destination host.

POTS
Plain Old Telephone Service - This is the term describe basic telephone service.

PPP
Point-to-Point-Protocol - The successor to SLIP, PPP provides router-to-router and host-to-network connections over both synchronous and asynchronous circuits.

PPPoE
PPP over Ethernet is a protocol for connecting remote hosts to the Internet over an always-on connection by simulating a dial-up connection.

Remote server
A network computer allows a user to log on to the network from a distant location.

RFC
Request for Comments - Refers to documents published by the Internet Engineering Task Force (IETF) proposing standard protocols and procedures for the Internet. RFC can be found at www.ietf.org.

Route
The path that network traffic takes from its source to its destination. The route a datagram may follow can include many gateways and many physical networks.
In the Internet, each datagram is routed separately.

Router
A system is responsible for making decisions about which of several paths network (or Internet) traffic will follow. To do this, it uses a routing protocol to
gain information about the network and algorithms to choose the best route based on several criteria known as "routing metrics".

Routing Table
Information stored within a router that contains network path and status information. It is used to select the most appropriate route to forward information along.

Routing Information Protocol
Routers periodically exchange information with one another so that they can determine minimum distance paths between sources and destinations.

SNMP
Simple Network Management Protocol - The network management protocol of choice for TCP/IP-based Internet.

SOCKET
(1) The Berkeley UNIX mechanism for creating a virtual connection between processes.

(2) IBM term for software interfaces that allow two UNIX application programs to talk via TCP/IP protocols.

Spanning-Tree Bridge Protocol (STP)

Spanning-Tree Bridge Protocol (STP) - Part of an IEEE standard. A mechanism for detecting and preventing loops from occurring in a multi-bridged environment. When three or more LAN's segments are connected via bridges, a loop can occur. Because of a bridge forwards all packets that are not recognized as being local, some packets can circulate for long periods of time, eventually degrading system performance. This algorithm ensures only one path connects any pair of stations, selecting one bridge as the 'root' bridge, with the highest priority one as identifier, from which all paths should radiate.

Spoofing

A method of fooling network end stations into believing that keep alive signals have come from and returned to the host. Polls are received and returned locally at either end

Static IP Address

A static IP address is an IP address permanently assigned to computer in a TCP/IP network. Static IP addresses are usually assigned to networked devices that are consistently accessed by multiple users, such as Server PCs, or printers. If you are using your Router to share your cable or DSL Internet connection, contact your ISP to see if they have assigned your home a static IP address. You will need that address during your Router's configuration.

Subnet

For routing purposes, IP networks can be divided into logical subnets by using a subnet mask. Values below those of the mask are valid addresses on the subnet.

TCP

Transmission Control Protocol - The major transport protocol in the Internet suite of protocols provides reliable, connection-oriented full-duplex streams.

TFTP

Trivial File Transfer Protocol. A simple file transfer protocol (a simplified version of FTP) that is often boot diskless workstations and other network devices such as routers over a network (typically a LAN).

Telnet
The virtual terminal protocol in the Internet suite of protocols - Allows users of one host to log into a remote host and act as normal terminal users of that host.

Transparent bridging
The intelligence necessary to make relaying decisions exists in the bridge itself and is thus transparent to the communicating workstations. It involves frame forwarding, learning workstation addresses, and ensuring no topology loops exist (in conjunction with the Spanning-Tree algorithm).

UDP
User Datagram Protocol - A connectionless transport protocol that runs on top of TCP/IP's IP. UDP, like TCP, uses IP for delivery; however, unlike TCP, UDP provides for exchange of datagram without acknowledgments or guaranteed delivery. Best suited for small, independent requests, such as requesting a MIB value from an SNMP agent, in which first setting up a connection would take more time than sending the data.

UNI signaling
User Network Interface signaling for ATM communications.

Virtual Connection (VC)
A link that seems and behaves like a dedicated point-to-point line or a system that delivers packets in sequence, as happens on an actual point-to-point network. In reality, the data is delivered across a network via the most appropriate route. The sending and receiving devices do not have to be aware of the options and the route is chosen only when a message is sent. There is no pre-arrangement, so each virtual connection exists only for the duration of that one transmission.

WAN
Wide area network - A data communications network that spans any distance and is usually provided by a public carrier (such as a telephone company or service provider).